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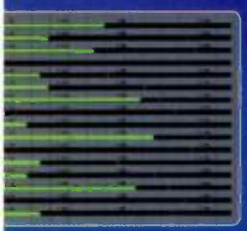

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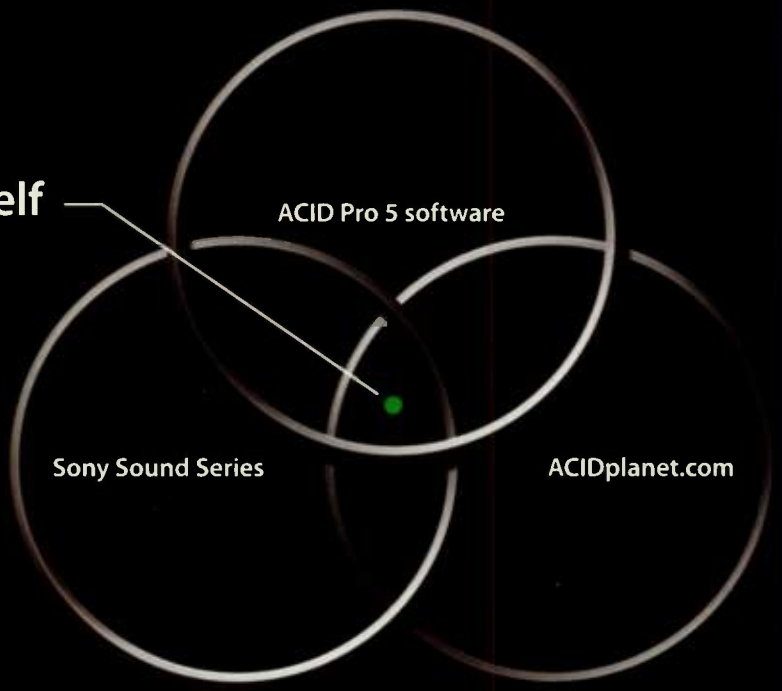

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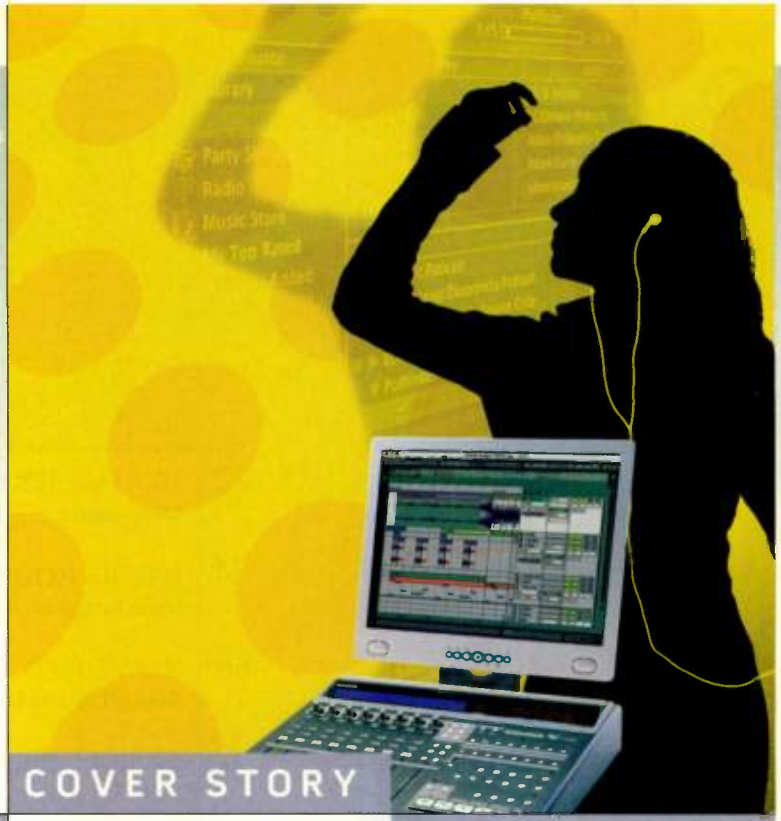
INSIDE



COVER STORY

THANKS TO MIX ASSISTANT EDITOR BREEAN LINGLE FOR FEIGNING RHYTHM DURING THIS ISSUE'S COVER SHOOT.

FEATURES

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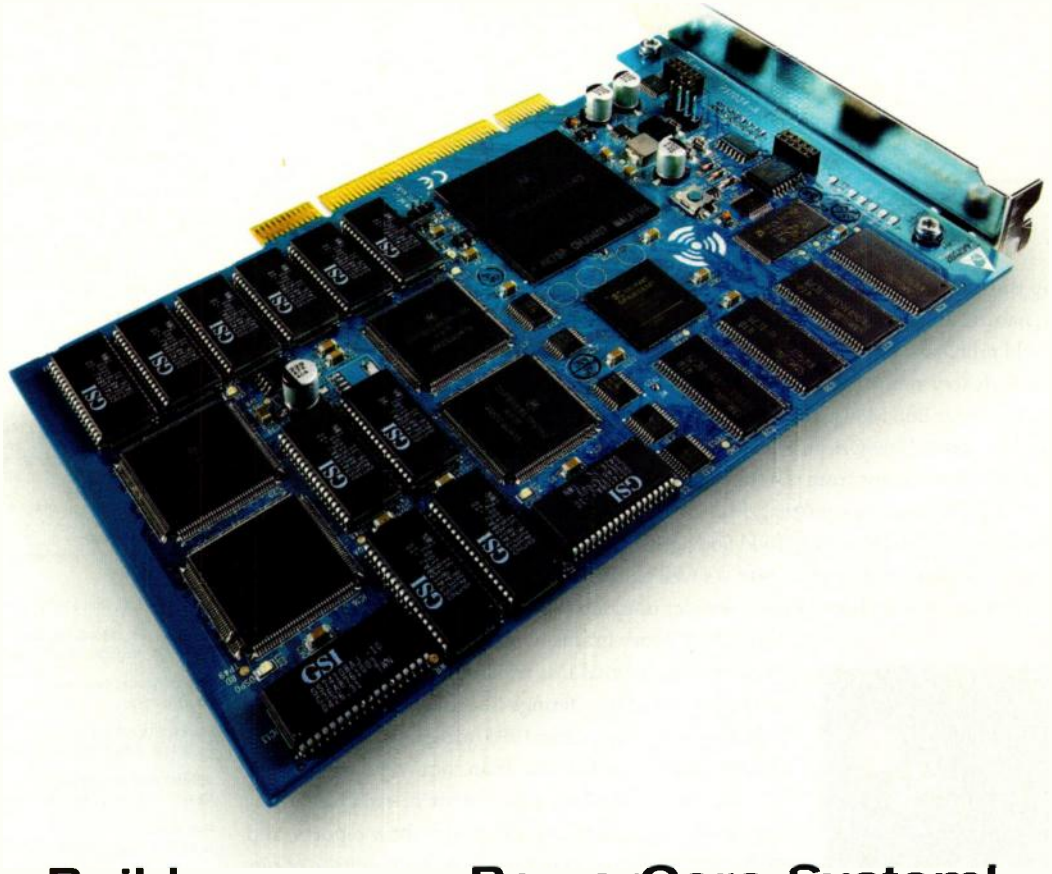
REVIEWS

POWERCORE UNPLUGGED



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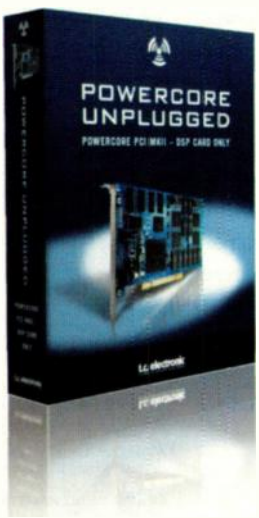

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That Was the Year That Was

As we wrap up the final issue of 2005, I've been struggling to get a grip on all that has happened this year. War, natural disasters, problematic relief efforts, political divisions, and economic uncertainty are age-old problems, but we had a terrible and exceptional combination of them in 2005.

The music industry mourned its share of passing industry veterans in 2005, including electronic-music pioneer Bob Moog. The most dramatic natural disasters, Hurricanes Katrina and Rita, hammered the great New Orleans music scene, and while we can't change what happened, we can help our fellow musicians from the Gulf Coast. To that end, we've supplied special links on our Web site at http://emusician.com/mag/hurricane_katrina_relief_musicians. (Special thanks to New Orleans evacuee and EM author Todd Souvignier for the links.)

EM, on the other hand, had a good year. As well as the usual collection of good stories, we offered several firsts in 2005, such as the field-recorder roundup in our October issue and the "Art of Podcasting" story in this issue (see p. 42). We've updated our online Back Issue List and 2005 Article Index so you can review our 2005 offerings. The lists, and all EM articles published since September 1999 (except for this issue), are available for free on the emusician.com Web site.

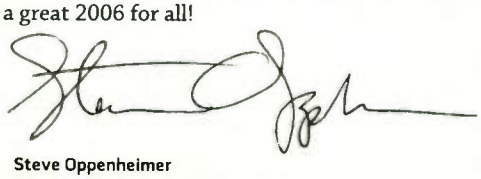
JULIE BIRUM

We also created an assortment of email newsletters and online special reports, trade-show reports, and Web-only articles and published the 2006 edition of our *Personal Studio Buyer's Guide*. The 2006 edition of our *Computer Music Product Guide* will reach newsstands and domestic (U.S.) EM subscribers this month and will also be available from our new online bookstore.

I'm proud to announce the first in our Personal Studio Series of special magazines, created in partnership with Thomson Learning Solutions. Each magazine in the Personal Studio Series will present focused information on one topic or product. The first in the series is *Mastering Pro Tools LE 7.0*, a start-to-finish guide to creating a project in the new version of Digidesign's popular DAW. This full-color magazine, designed by EM's talented art department, combines Thomson's step-by-step Pro Tools instructional materials and EM's broader recording stories for DAW-based personal-studio owners and features a CD with example sessions and more. It will be available this month wherever you find EM, including on our online bookstore.

Here's a bonus: the Webinar, or Seminar on Demand (SOD) that I mentioned in last month's First Take will be available starting this month for free viewing on our emusician Web site. This special streaming video features ace Korg USA sound designer Jack Hotop showing how to personalize a variety of sample-based synth sounds. Hotop is a master, and his tips apply to most hardware and software synths, so head for our site and check it out.

The fallout of the many tragedies of 2005 will be with us for a long time. Nevertheless, I am optimistic about 2006 and see it as a year of potential growth and recovery. To all who had a tough year, I trust that the joy of making music helped you to find strength, and I hope that we were able to help you along the way. Here's to a great 2006 for all!



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Letters

Field Day

It's been a long time since I've been interested in a magazine article enough to read it more than once, but I'm reading Nick Peck's cover story "Playing the Field" (October 2005) for the sixth time. I'm looking hard at field recorders for my own use, so I'm scrutinizing the text.

Peck's work represents a benchmark for this kind of article. It has tons of substance and does what any good article should do, telling me more about these machines than I thought I knew and introducing me to units that I didn't know about. I liked the substantial contributions from the audio professionals who tested these units, because that eliminates a one-sided perspective, which is the great weakness of product reviews. I hope that EM will base future reviews along those same lines. It's a great formula.

Your October 2005 issue is especially good. My only complaint is that it has nothing about microphones. However, I see that your November cover story will be about ribbon microphones ("Ribbon Revival," November 2005). I mainly record strings and was therefore thinking that I should add a ribbon mic to my stash.

Bob Spear
via email

Hearing Is Believing

I just read Steve Oppenheimer's tribute to Dr. Robert Moog (October 2005, "First Take: A Legend Passes into History"). It was very touching. I've used Moog's gear since the mid '70s.

My question is about iPod formats. Nobody seems to be able to tell me which compression format will give me acceptable quality. Apple Lossless Encoding produces huge files compared with the AAC encoder (MPEG-4) at 160 kbps, which is touted as near-CD quality. I burned several samples to CD and, to my dismay, was unable to casually discern any loss of sonic quality, even with the AAC set to 128 kbps.

That goes against all that we are taught. How can so much data be discarded without obvious degradation? How big an iPod do I need to carry as much of my library as I want?

I've enjoyed EM for what must be 20 years now, ever since I received a free copy with my Ensoniq Mirage.

Pete Wacker
Phoenix, Arizona

Pete—Although Apple Lossless Encoding produces the most accurate sound, AAC encoding does an admirable job, especially at high conversion rates. If you've been playing Moog synths since the mid '70s, you're old enough to have incurred some hearing loss, especially at the high end. If you can't hear the difference between uncompressed audio and AAC audio at 128 kbps, there's good news and bad news. The bad news is that your hearing loss is evident; the good news is that you can stuff more music on your iPod than I can.

I've compressed my entire music collection to 192 kbps AAC, both for my iPod and for listening to music streamed from my Mac to my studio monitors. I still hear a difference between that rate and higher rates, but the difference is so negligible that saving disk space is more important to me than hearing that extra 1 percent (or less).

I suggest that you do some critical listening before you commit to a conversion rate. Select at least three short musical passages with wide ranges in spectrum and dynamics (solo drums are good, because you'll probably notice the point at which drums lose their punch and cymbals lose their sizzle). Encode them at 128, 160, 192, and 256 kbps and compare them to the uncompressed versions. If you really can't hear a difference between uncompressed and compressed at 160 kbps, or if the difference is acceptable to you, there's no reason to go any further.

How can so much data be discarded without obvious degradation? Blame psychoacoustics: our brains fill in the blanks. If you were to compare compressed and uncompressed audio files in an audio editor, though, you would see a difference, even if you couldn't hear it. —Geary Yelton

Taming a Tiger

I hope that you will do another article like "Tracking the Big Cats" (September 2004) about optimizing Mac OS X for audio. I have a lot of junk on my hard drive that I don't need, but I know to ask the experts before putting it in the Trash.

David Bullock
via email

Critical Listening

It would be useful to see regular articles on how best to record for headphone listening. Because most people listen to music through headphones, it seems critical that recording engineers and producers who work in personal studios should know how to deliver the best

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Cardioid Condenser Microphone

"The AT2020 comes from a company with an amazing list of great products for project and home studios, and will likely become a standard in that market."
Dave Jones Performing Songwriter March/April 2005

"If you want an affordable mic that will work on a wide variety of sources, the AT2020 is hard to beat. It sounds great, is quiet, and, sheesh, at that price, go out and buy a pile of them."
Mitch Gallagher EQ September 2005

"A budget mic with a big-ticket sound.... you'll get more than you pay for."
Scott Burgess Pro Audio Review June 2005

"With the AT2020, Audio-Technica has succeeded in bringing its standard of construction quality into the entry-level price range."
Nick Batzdorf MIX May 2005

"Not all inexpensive mics are the same. The AT2020 is proof. I don't know how Audio-Technica did it, but this mic is well built, comes with useful accessories, and offers solid performance at an amazing price."
Garrett Haines Tape Op September/October 2005

"The AT2020 allows (and even begs) you to try it in applications that you might not consider optimal for a condenser....You should be able to use this mic for everything from insect mating calls to jet propulsion testing."
Darwin Grosse Recording June 2005

"Judging by the price, (the AT2020) is aimed at project and budding home studios. But given the horizonlike frequency-response chart, this puppy may be aimed at more experienced studios, as well. Who couldn't use an extra studio condenser or, at this price, several?"
Doug Eisengrein Remix July 2005

"Simply put, the AT2020 is a fine mic at any price, but at $99 it's a value proposition you almost can't afford to refuse."
Michael Molenda Guitar Player April 2005

"If the $100 price range is your budget, then rest assured that the AT2020 is as good as it gets in a condenser mic that can handle vocal and instrument duties."
Steve Langer mojopie.com April 9, 2005

"With the introduction of the AT2020, Audio-Technica has broken the price barrier without sacrificing sound quality or rugged reliability."
Chris Gill Future Music June 2005

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Next Month in EM

Editors' Choice Awards

EM's prestigious Editors' Choice Awards are given to the best new products tested by EM editors and authors in the past year. Get the lowdown on the good stuff!

COVER FEATURES COLUMNS

Loud Amps in Small Studios

You can record real tube-amp tones without blasting out your walls. This article will show you how, examining options such as isolation boxes, baffles, and hardware and software speaker simulators.

Making Connections with ReWire

EM presents tips and tricks for using Propellerhead's ReWire protocol with Pro Tools LE and other popular applications.

Making Tracks:
Get in the Apple Loop

Use ReWire to audition proprietary Apple Loops within other applications such as Ableton Live and Propellerhead Reason and then render the loops in Apple's Garage Band.

Sound Design Workshop:
Breakpoint Envelopes

Go beyond standard LFO and envelope modulation with looping and one-shot breakpoint envelopes.

Working Musician:
Be a Demo Producer

Learn the responsibilities of a demo producer, how to find clients, what to charge, what such work can lead to, and how the Web has changed the demo producer's role.

... and much more!

Letters

sound possible to products, such as Apple Computer's iPod and the like, through earbud headphones. Millions of these devices are sold and used regularly. You can't say that about any other consumer system.

Granted, writing about studio monitors, 24-bit converters, 192 kHz operation, and so on may cause technical writers to twitch with excitement. But for most personal studios, getting the best sound to iPods and knowing how to make great-sounding MP3s is much more useful.

I mostly record after 10 p.m., so direct recording is the only practical method for me to use. I need to know how to get the best sound and how to deliver that sound through headphones. My ears are stereo, not 5.1.

Mark
San Francisco, California

Mark—Despite the success of the iPod and other MP3 players, I disagree that most people listen only to MP3 files on headphones or earbuds. Many people also listen to CDs, radio, and MP3s through automobile sound systems and home stereos. Therefore, savvy producers prepare their music for multiple delivery systems and consider how their music will sound when played in a room or a vehicle.

The old-school solution is to mix on studio monitors, and then check those mixes on different systems and tweak until your mixes sound great on high-quality systems and sound as good as possible on low-fi systems. The new-school method is to create multiple mixes, including one for MP3 delivery. Either way, you need to check your mixes on several systems. You are not going to hear everything accurately if you mix only on headphones and don't check your mixes; the result is likely to be an inferior product.

For information on preparing MP3 files, see "How to Make Killer MP3s," which was originally published in the 2002 edition of our Desktop Music Production Guide. *You can download the story free from the Web Clips section of the emusician.com Web site (see* **Web Clip 1***). In addition, see this month's cover story, "The Art of Podcasting," on page 42.*
—Steve O

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Published letters may be edited for space and clarity.

Learning the Ropes

EM is extremely informative and useful. However, as a fairly new reader who is new to recording music, I have trouble understanding some terms that your magazine discusses.

Articles that mention equalization, compression, S/PDIF, AES/EBU, dual-VGA outputs, and so on, are confusing because they don't define these terms. I'm sure I'm not alone in this, and as your readership grows with new readers, it's important to inform them about these terms so they won't be lost.

It would also be a huge help if EM created Web Clips that compare a song with EQ and without EQ so that those people who are just learning can hear the differences and understand what it's all about.

Walt Ribeiro
via email

Error Log

October 2005, "What's New," p. 28. The item about Sony Hi-MD Recorders states, "At summer NAMM, (www.sony.com) Sony unveiled a new digital storage format called Hi-MD." According to Sony, however, its first Hi-MD format product was the MZ-NH1 Hi-MD recorder, which began shipping in the spring of 2004. Sony introduced the MZ-M10 and MZ-M100 models at the July 2005 Summer NAMM show and began shipping those two products in August 2005. EM

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E-MU Systems and legendary amplifier/speaker designer Jun Makino have designed the new PM5 Precision Monitor from the ground up to reveal every detail of your mix. At $249.99* the PM5 offers superior imaging, hi-end transient detail and articulate bass with features rivaling compact nearfield monitors over twice the price.

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EMspotlight

The Possible Worlds of Steve Roach

For over 25 years, and on more than 80 releases, Steve Roach has created organic, slow-moving soundscapes that provide a seemingly endless variety of electro-acoustic timbres and textures. In this exclusive EM interview, Roach talks about his musical motivations, playing live, and his return to analog synthesizers on his latest release, *Possible Planet* (Timeroom Editions). By Gino Robair. emusician.com/em_spotlight

On the Home Page

EM Web Clips

A collection of supplemental audio, video, text, graphics, and MIDI files that provides examples of techniques and products discussed in the pages of *Electronic Musician*.

EM 2005 Article Index

Ever wonder in which issue a specific feature, column, or review appeared? You'll find the answer in the 2005 Article Index, which is now online.

Show Report

The 2005 Audio Engineering Society (AES) show is one of the largest annual pro-audio expos in the U.S. Visit emusician.com for Senior Editor Mike Levine's report on the exciting new recording gear and music software unveiled at this year's show.

EM seminars on demand

The EM Seminars on Demand are an exciting way to see new products and learn new applications and techniques online and at your leisure. Korg USA's top sound designer, Jack Hotop, shows you how to customize a variety of synth sounds to suit your performing and compositional styles.
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EXi EXPANSION INSTRUMENTS

Making good on the promise of open architecture, the new STR-1's plucked-string physical models deliver realistic guitars, clavs, ethnic sounds and unheard-of textures and timbres. And this latest EXi is being offered free to current and future OASYS owners! Go online to check out STR-1 sound clips.

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By Geary Yelton

Digidesign Mbox 2

Digidesign (www.digidesign.com) has announced the Mbox 2 (Mac/Win, $495), the next generation of the company's USB-powered audio and MIDI interface. With support for 24-bit, 48 kHz audio, Mbox 2 has two analog inputs with balanced XLR and unbalanced ¼-inch jacks, two unbalanced ¼-inch analog outputs, stereo S/PDIF I/O, and 16-channel MIDI I/O. Its complement of software includes Pro Tools LE, Pro Tools Ignition Pack, and 44 DigiRack and Bomb Factory plug-ins.

Pro Tools LE delivers 32 audio tracks (with 128 virtual audio tracks), 256 MIDI tracks, ReWire support, and Beat Detective LE. Ignition Pack gives you scaled-down versions of Propellerhead Software Reason 3, Ableton Live 4, FXpansion BFD, IK Multimedia AmpliTube, and Celemony Melodyne. Available for $100 more, Mbox 2 Factory bundles the complete Mbox 2 with an iLok USB Smart Key preauthorized with additional plug-ins from Digidesign and Bomb Factory.

PreSonus Inspire 1394

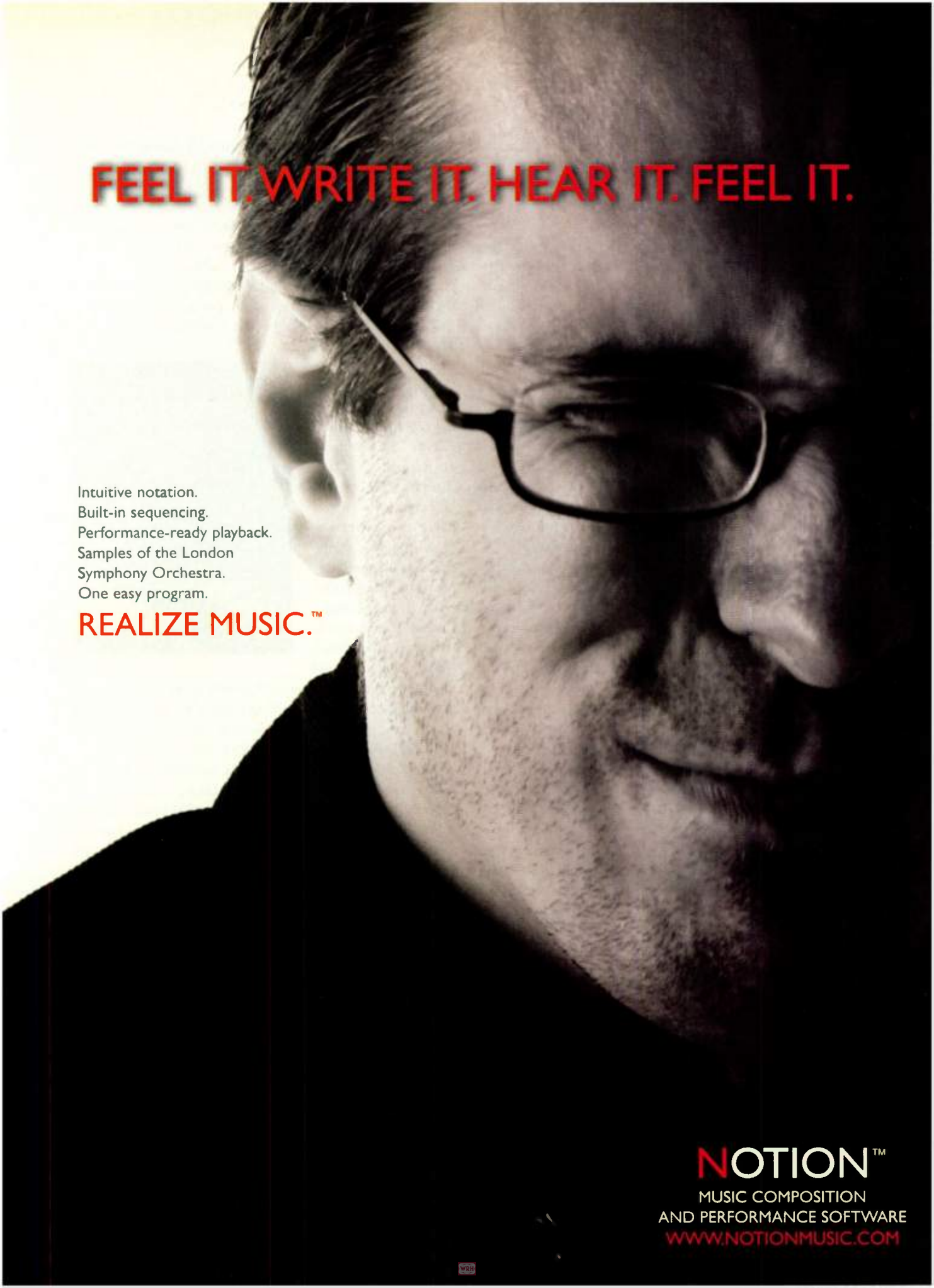
PreSonus (www.presonus.com), a Louisiana-based company that's earned loads of respect making affordable studio preamps and audio interfaces, has taken the wraps off the Inspire 1394 FireWire recording system (Mac/Win, $229). Featuring two balanced XLR inputs, two high-impedance instrument inputs, and two switchable line and phono inputs, the Inspire can handle four simultaneous channels of 24-bit, 96 kHz audio. The unit's low-noise, high-gain preamps accommodate sources ranging from keyboards and guitars to condenser mics and turntables. Outputs include unbalanced RCA, stereo ⅛-inch line, and stereo ⅛-inch headphones.

The Inspire's small but powerful hardware interface is only half the story; a software control panel furnishes access to its zero-latency mixer. You control the input gain, preamp boost, sampling rate, phantom power, limiter, and main and headphone output levels from your computer screen. You can save and recall your settings from one session to the next. Because the Inspire has two FireWire ports, you can daisy chain as many as four units for a maximum 16 simultaneous inputs, all controlled from a single onscreen panel. The Inspire 1394 comes bundled with Steinberg Cubase LE (Mac/Win).

Native Instruments Akoustik Piano

Akoustik Piano (Mac/Win, $349) is an all-new virtual instrument from Native Instruments (www.nativeinstruments.de). It delivers the sound of a vintage Steingraeber 130 upright piano and three concert grands: a Bösendorfer 290 Imperial, a Bechstein D 280, and a Steinway Model D. A choice of 16- or 24-bit samples detail the full sustain and release phases of every note recorded at ten Velocity levels. Layer morphing ensures seamless Velocity switching, according to Native Instruments, and samples stream direct from disk.

Akoustik Piano simulates the action of soft, sostenuto, and sustain pedals and gives you precise control over sustain and release resonance and pedal and key noise. You can even adjust whether the piano lid is closed, open, or half open. Select from a variety of tunings, and the integrated convolution reverb lets you select from four sampled rooms. In standalone mode, a 2-track MIDI recorder lets you capture your performance. Akoustik Piano also runs as a plug-in and supports Audio Units, DirectX, RTAS, and VST plug-in formats.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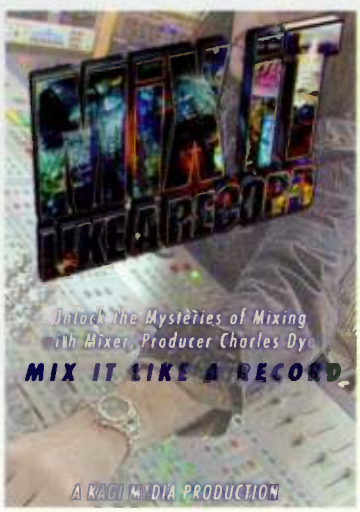
Get Smart

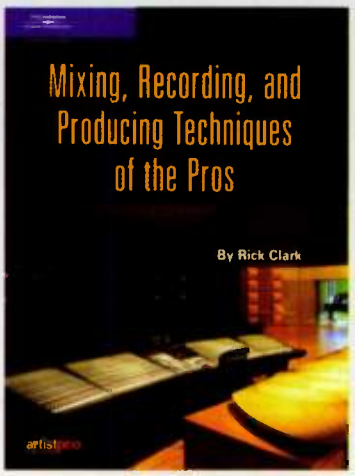
O'Reilly Media's **Pogue Press** (www.missingmanuals.com) has released *GarageBand 2: The Missing Manual* ($24.95), by best-selling Mac author David Pogue. In his witty and inimitable style, Pogue explains how to get the most from Apple's popular audio sequencer, from initial setup to advanced troubleshooting. Along the way, you'll learn how to edit software instruments and effects, split and join regions, import songs from iTunes, create your own Apple Loops, and accomplish many other useful tasks. An appendix offers a crash course in basic music theory, and another lists every keyboard shortcut in GarageBand 2. Helpful color diagrams appear throughout the 272-page softbound book.

Also written by David Pogue from **Pogue Press** is *Mac OS X: The Missing Manual, Tiger Edition* ($29.95), a book that provides a comprehensive assessment of the latest Mac OS X 10.4. Over the course of 864 pages, Pogue explains Spotlight, Dashboard, Automator, VoiceOver, and other new technologies that Tiger incorporates. Ten pages are devoted to speech recognition and speech synthesis. Pogue also discusses how to use included programs such as Font Book, Terminal, and QuickTime Player Pro. If you're new to OS X, this book is an excellent place to start, and if you're an experienced user, it will teach you things about using Tiger that you may well never discover on your own.

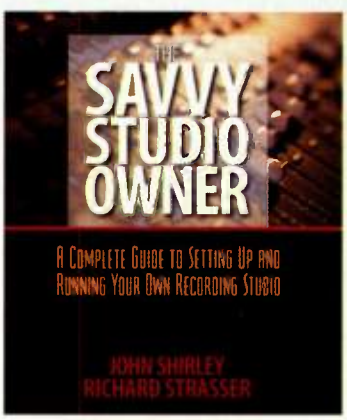


Mix It Like a Record ($149) is a video DVD and Pro Tools–based mixing course published by **Kagi Media** (www.kagimedia.com) and taught by multiplatinum and Grammy Award–winning engineer and producer Charles Dye (Lauryn Hill, Ricky Martin, Shakira). Recorded in locations ranging from Seattle's Experience Music Project and Miami's Supersonic Studios to the Grand Canyon, the 7 GB DVD gives you three hours of video instruction and 40 sessions that run on any version of Pro Tools. Dye teaches his mixing philosophy and technique by dissecting a mix and explaining the reasoning behind every channel tweak, plug-in choice, and automation move. Chapters focus on topics such as how to mix each instrument, enhance mood with effects, and use automation to increase musical expression. Owners will also gain access to online QuickTime movies and additional Pro Tools sessions.

Producer and Nashville-based *Mix* editor Rick Clark takes a different approach to teaching studio skills in *Mixing, Recording, and Producing Techniques of the Pros* ($34.99). This 336-page book from **Course Technology** (www.courseptr.com) is a revision of his 2001 book, *The Expert Encyclopedia of Recording*. Clark conducted hundreds of interviews with a diverse assortment of well-known studio denizens such as Kenny Aronoff, Greg Calbi, Bob Clearmountain, Danny Elfman, Daniel Lanois, Eddie Offord, Norbert Putnam, and Elliot Scheiner. They address 23 specific issues such as acoustic ensemble recording, recording piano, radio processing, and room tuning, with a chapter devoted to each topic. A 102-page appendix lists discographies for each of the interviewees.



The Savvy Studio Owner ($19.95), published by **Backbeat Books** (www.backbeatbooks.com), is subtitled *A Complete Guide to Setting Up and Running Your Own Recording Studio*. Authors John Shirley and Richard Strasser describe the ins and outs of owning a commercial facility. More than half of the book covers subjects such as researching the market, financing your studio, acoustics and design, equipment and supplies, and other aspects of establishing your studio business. The second section deals with day-to-day operation and features topics such as marketing, bookkeeping, legal issues, and taking care of employees. Appendices provide various worksheets and a list of online resources.



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Korg Legacy Collection, Digital Edition

Legacy Collection, the acclaimed software emulation of classic synths and effects from Korg (www.korg.com), is a tough act to follow. Nevertheless, Korg recently introduced Legacy Collection, Digital Edition (Mac/Win, $199; $99 for previous Legacy Collection owners). The new suite resurrects the Korg M1—the first and one of the most popular digital music workstations ever made—and updates Legacy Collection's Wavestation and MDE-X software. In addition to Legacy Collection's previous support for Audio Units and VST plug-in formats, it now introduces support for RTAS.

Introduced in 1988, the original M1 blended sample playback with digital processing. Now its sound engine is available as a 256-note polyphonic, 8-part multitimbral soft synth with new features such as resonant filters and two insert effects for each timbre. In addition to the entire PCM, Program, and Combination data of the expanded M1EX and all 19 optional ROM cards, the software version supplies new data for more contemporary sounds.

Wavestation 1.5 adds the complete data from all six original Wavestation ROM expansion cards (including 150 wave sequences) and expands its preset library to 1,400 sounds. It also brings the MDE-X multi-effects plug-in to version 1.2, with enhanced CPU efficiency. Unlike the prior Legacy Collection, Digital Edition relies on an included USB key for copy protection.

Download of the Month

Quad Zamp 1.0 (Win)

Quad Zamp 1.0 (freeware) from Canadian software developer Les Productions Zvon (www.lesproductionszvon.com) is a sample player with a variety of unusual features geared primarily to percussive sounds. The VST plug-in for Windows (developed in SynthEdit) comes in single- and multiple-output versions. The multiple-output version has four outputs and is available only in conjunction with Les Productions Zvon's sample packs, which are all worth a listen. The Prepared Rhodes, a John Cage style mechanical preparation of a Fender Rhodes electric piano, is among my favorites (see **Web Clip 1**).

Quad Zamp has four identical Multi Wavplayers, each consisting of three WAV file players. Each WAV file player has its own page of controls, and individual players can be turned off to save CPU cycles. WAV file playback is triggered by MIDI notes between C2 and B2, and the same note can be assigned to different WAV files if desired. The Multi Wavplayers have a fourth page of controls for tempo-synchronized randomization of playback start position, direction, and pitch.

Each WAV file player has an AD (attack-decay) envelope for pitch, and an ADSR envelope for amplitude (Quad Zamp has no filters). Samples can be played in forward or reverse order and set to loop or play as one-shots. Handy *x-y* controllers, which are always visible on the control panel, allow you to set each WAV file player's level and pan position.

In addition to the one- and four-output versions of Quad Zamp, Les Productions Zvon has an even simpler sample player, Zamp 1.2, which is also free. Zamp 1.2 consists of a single Quad Zamp Multi Wavplayer, but it has an ADSR pitch envelope, monophonic and legato modes, and portamento. Zamp 1.2 also has the Quad Zamp randomizer.

All of these sample players are basic, and therein lies their charm. In spite of their simplicity, however, you can create lots of unusual sounds using either your own WAV files or the Les Production Zvon libraries.

EM WEB CLIPS

—Len Sasso

WAVES

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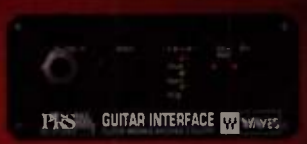

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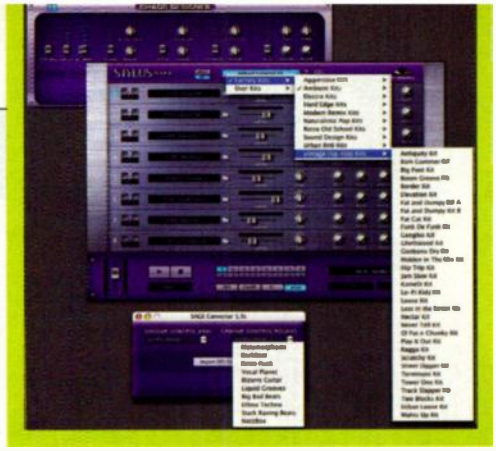

Now available from Spectrasonics (www.spectrasonics.net) is an update to its flagship groove module plug-in, Stylus RMX 1.5 (Mac/Win, $299). It features revised content with 500 new Multi grooves and 250 new kits, an expanded Groove Elements sound directory, and enhancements to the Core Library that add new categories and Example Groove Menus in various genres. Stylus RMX 1.5 is a free download for registered users, or you can order it on DVD-ROM for $15.

Stylus RMX 1.5's embedded help system lets you access a reference guide more than 68,000 words long, with compete cross-referencing to video tutorials. More than 4.5 hours of new video brings the total to nearly eight hours of bundled training. Chaos Designer's new Buzz parameters let you create real-time stutter edits and unusual effects. An improved SAGE Converter offers drag-and-drop batch conversion of REX file libraries and support for additional Groove Control libraries. Other changes include Windows RTAS support, expanded LFO sync, MIDI Learn functions, hardware controller templates, and as many as 16 active Edit Groups.

Wave Arts PowerSuite 5

Wave Arts (www.wavearts.com) has announced upgrades to all five plug-ins in its top-of-the-line bundle, Power Suite 5 (Mac/Win, $599). MultiDynamics 5 and FinalPlug 5 are available as of this writing, and MasterVerb 5, Panorama 5, and TrackPlug 5 should be shipping by the time you read this (each is also available separately). The five dynamics and effects processors cover essential aspects of sound design, tracking, mixing, and mastering. Wave Arts has redesigned the visual interface of each and added support for sampling rates as high as 192 kHz. Supported Windows formats are DirectX, RTAS, and VST, and Mac OS X formats are Audio Units, MAS, RTAS, and VST.

MultiDynamics 5 ($199) offers as many as six independent bands of either expansion and gating or compression. The update provides a selection of clean and vintage compression modes, new presets, and better preset management. FinalPlug 5 ($199) is a peak limiter and volume maximizer that's especially suited for mastering applications. It has extensive noise-shaping, dithering, and bit-depth truncation capabilities, and the new version features an improved limiting algorithm with automatic release control.

Yamaha Tyros2

Yamaha (www.yamaha.com) has replaced its flagship Tyros arranger workstation with the Tyros2 ($4,095). Features such as USB mass storage and a broadband Internet connection allow the Tyros2 to function as part of a computer-based music-production system. An external computer monitor can mirror the workstation's onboard VGA display. Onboard tools let you import WAV and AIFF files and design your own custom voices. You can expand the standard 4 MB of sample RAM to 1 GB and capture your performances with hard-disk recording. A new feature called Super Articulation lets you access real-time controls specific to the instrumental timbre you select, resulting in more realistic performances. The Tyros2 also has a redesigned keyboard action designed to be faster, smoother, and more responsive than its predecessor's. EM

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WRH

It's All in Your Head

By Scott Wilkinson

More convincing surround headphones are on the way.

Surround sound is becoming increasingly important for electronic musicians of all sorts. Movie and game soundtracks are routinely mixed in 5.1 surround, and studios often deliver multichannel music mixes for DVD-Audio and SACD. But installing a surround-sound speaker system is sometimes difficult, if not impossible, because of space and budget constraints. There's also the ire of family and neighbors when the volume gets too high. Finally, a surround system's sweet spot is very small, normally allowing only one person to occupy it.

To address those problems, several pioneers have tried to simulate surround-sound speaker systems using conventional headphones. Such simulations use mathematical algorithms called head-related transfer functions (HRTFs) to calculate the effect of sound waves diffracting around a human head from any given direction. The HRTFs are used to alter the amplitude, phase, and delay of an audio signal before it's sent to the headphones, and the listener perceives the sound coming from the desired "direction."

Unfortunately, most of these simulation systems suffer from a couple of drawbacks. For one thing, the HRTFs are generic, based on the average of many individual measurements, which means they are accurate for no one in particular. Furthermore, as a listener turns his or her head, the simulated speaker system turns with it, which sounds unnatural. If you were listening to a conventional surround speaker system, turning your head would change the relative orientation of your ears with respect to the speakers, resulting in plainly audible changes to the sound.

COURTESY SMYTH RESEARCH

FIG. 1: The SVS system creates custom surround simulations for each user and room, and it includes a head tracker that senses the wearer's head position, so that the virtual speakers appear to remain stationary as the head moves.

A company by the name of Smyth Research (mike@smyth-research.com) has come up with an ingenious solution to such concerns. Smyth Virtual Surround (SVS) is the brainchild of Stephen Smyth, who has been working on it for three years. Unlike other headphone-based surround-simulation systems, SVS starts by "capturing" the HRTF of an individual listening to a specific set of speakers in a specific room. The listener puts a small microphone in each ear, and a series of test signals are played from each speaker, which takes about two minutes for a 6.1-channel system. The resulting HRTFs are stored in a small file (roughly 1 MB) and used to simulate the effect of sounds coming from the modeled speakers.

As many as eight channels of audio are fed into SVS, which applies the selected HRTFs and sends them to headphones fitted with a small tracking device that includes motion sensors to gauge the wearer's head position at all times (see **Fig. 1**). That information is used by SVS to modify the HRTFs in real time so that the virtual speakers appear to remain in place as the listener's head moves.

For the pro-audio market, Smyth Research intends to introduce a standalone, dual-headphone processor with eight channels of balanced, analog I/O designed to be inserted into a mixer's bus. SD memory cards are used to load and transfer HRTFs from one unit to another. But the company's main goal is to license the technology to consumer-electronics manufacturers; in fact, they've successfully demonstrated SVS at various CE trade shows.

Among the potential applications is modeling any control room to which you have access. After spending a few minutes to capture your HRTFs in the selected room, using its speakers, you could then take the processor (or perhaps only a small SD card) to your bedroom or garage studio and hear your music as if you were in the original control room. How about monitoring in location trucks, where space is often way too tight for a surround speaker system? I'm excited by this technology, and I look forward to seeing it become commercially available. **EM**

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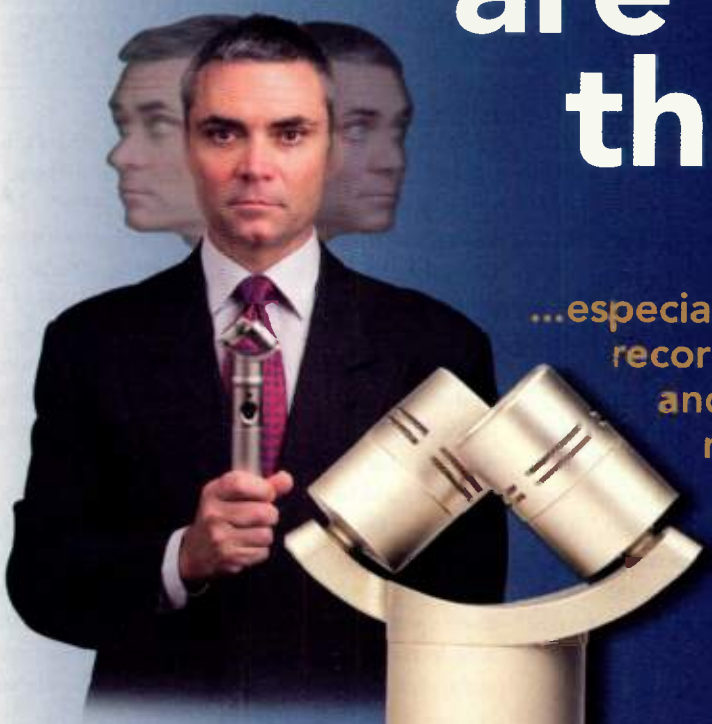

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Across the Centuries

By Matt Gallagher

Niyaz unites traditional and electronic music.

Los Angeles–based trio Niyaz comprises vocalist Azam Ali of Vas, multi-instrumentalist Loga Ramin Torkian of Axiom of Choice, and producer and remixer Carmen Rizzo. The group's creative chemistry results in a virtually invisible fusion of ancient and modern sounds. For Niyaz's self-titled debut (Six Degrees Records, 2005) Ali and Torkian drew upon Sufi poetry and medieval, folkloric music from Iran, India, and Turkey. "We borrow quite a bit from all those traditions," says Torkian.

Ali and Torkian brought their initial tracks to Rizzo, who has worked with BT, Alanis Morissette, Seal, Ryuichi Sakamoto, and Cirque du Soliel, among others. "Azam and Loga wanted to do a hybrid type of project," Rizzo says. "They both have backgrounds in classical and traditional styles of Middle Eastern music. I wasn't interested in doing a traditional type of record; I was more interested in doing something a little darker and more cutting edge.

"They would give me elements that had voice, instrumentation, and maybe some percussion loops," Rizzo says. "Some songs were more developed than others. It was my job to bring in the electronic elements—the keyboards, beats, textures, and sound design—and present it to them. Then the three of us would finish [the track] together."

DOROTHY LOW

Niyaz/Niyaz

Torkian recorded vocals and most instrumental parts in his personal studio, Nandi Sound, to a PC running Steinberg's Nuendo. "I used a Neumann M 149 [condenser mic] going through an Avalon preamp," Torkian says. "The Neumann captures high frequencies really well. For percussion, I primarily used an AKG C 414." Rizzo brought his Mac G4 PowerBook, Digidesign Mbox, and AKG C 414 to Paris and recorded guest musician Arash Khalatbari in Khalatbari's apartment.

"We tried to keep entire performances to give [the music] that live feeling," Torkian notes. He says his biggest challenge for *Niyaz* was changing the way he records instruments such as saz, oud, tabla, and darbuka. "I've always used those instruments in an acoustic context," Torkian says. "I soon learned that the way that I used to record them may not apply in this context. Recording the saz was the hardest because of the nature of the instrument.

"We'd export files without effects and take them to Carmen's studio," Torkian says. Rizzo's Studio 775 is based around a Mac G5 and Pro Tools|HD 2 Accel system. "They would give me raw files from bar 1," Rizzo says. "I would import them into Pro Tools. I used Native Instruments' Absynth, Battery 2, FM7, and Reaktor to create a lot of my parts. Most of the EQs were Focusrite plug-ins. I use the Digidesign limiter called Smack. The main reverb was Digidesign's ReVibe.

"Reaktor is wonderful for audio effects," Rizzo says. "I used a lot of the delays and filters. I'll process a vocal with effects, print it on a separate track, and then blend them together. Often we chose not to make the instruments sound as best as they could. 'In the Shadow of Life' is a beautiful piece that has no rhythm. I tried to make Loga's [Jonathan Wilson Designs] GuitarViol [an electric bowed guitar based on a 14th century European instrument] sound like something you've never heard before, manipulating it with plug-ins and various things. I would loop some of Loga's saz parts. He'd play a riff and I would reverse it, filter it, or auto-pan it.

"Many electronic world-music records sound manufactured," Rizzo observes. "We wanted to pay respect to the poetry and the wonderful instruments. That's why it sounds like it all meshes. Electronic music is not just dance music." EM

For more information, go to www.niyazmusic.com.

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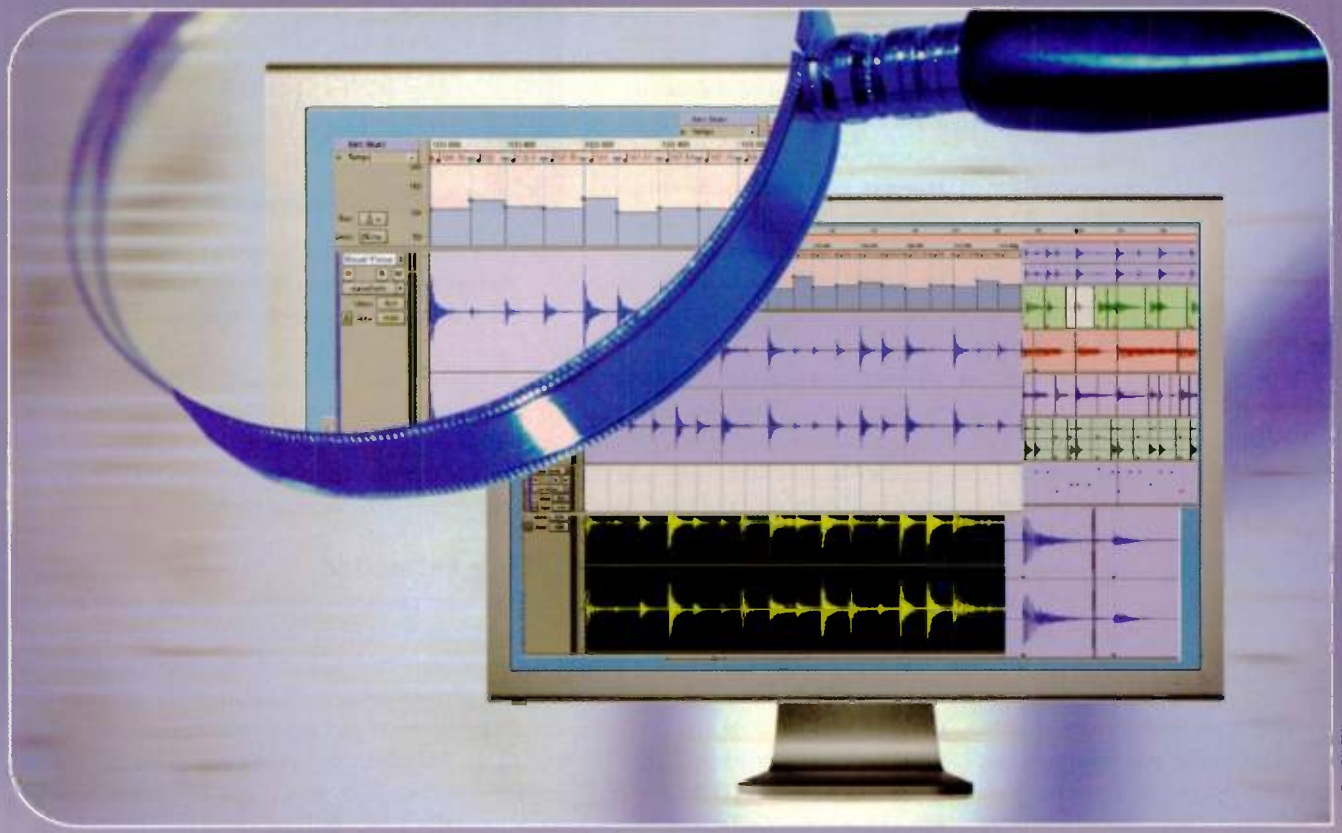


LIZABETH HEAVERN

8 Groovy Tips for Beat Detective

By Erik Hawkins

Unlock the hidden power of Pro Tools' groove feature.

Using Beat Detective to slice up a loop into a series of individual beats is so simple that one hardly need glance at the Pro Tools manual. But there's more beneath the surface of Beat Detective than meets the eye. With a little of your own detective work, you'll see that slicing up loops is just one of the program's many tricks.

Combined with tick-based audio tracks, which were first introduced in Pro Tools 6.7, Beat Detective is like having Propellerhead ReCycle and a sampler built in to Pro Tools. Now, just like a MIDI event on a MIDI track, your separated audio regions that are on ticks-based audio tracks will retain their bar, beat, and tick positions—even when a session's tempo is changed. Beat Detective is consequently more useful than ever as a tool for loop-based production and remixing.

Originally, Beat Detective was only available in Pro Tools TDM. As of version 6.4, however, Beat Detective LE was added to Pro Tools LE (and is also a part of M-Audio Pro Tools M-Powered). The primary difference between the TDM and LE versions is that Beat Detective LE doesn't enable you to edit multiple audio regions at the same time, whereas the HTDM version of Beat Detective allows you to edit several selected audio regions simultaneously. If, however, you typically edit only one loop at a time, that difference will be relatively minor and you won't miss it if you are using Beat Detective LE.

Marking Your Beats

At times, Beat Detective does not catch a transient until you've pushed the Sensitivity control all the way up. If you're editing a simple waveform that has well-defined transients, the beat markers will be placed right where you want them. If, however, the waveform is complex, with lots of tiny, smeared transients, then you will end up with more beat markers than you need. In that case, when you slide the Sensitivity control back down again, the markers you do want will usually disappear, along with the erroneous markers.

Instead of painstakingly deleting the markers you don't want, lock down the markers you want to keep. That is called promoting a marker. Using the Grabber tool, Control + click (on the Mac, use Command + click) on the markers you want, and then slide the Sensitivity control down to 1 percent. Only the beat markers that you promoted will remain.

If pushing the Sensitivity control all the way up still doesn't catch a particular beat, you can drop a beat marker in manually with the Grabber tool by clicking in the selected audio region. You can also use the Grabber tool to slide the marker around and fine-tune its position.

If you have an HTDM system, you can use the Collection mode, in the Detection section, to collect beat markers from different audio regions to create a single, composite beat map. For example, you could collect beat markers from each track of a multitrack drum session, and then use the composite beat map to slice up all of the drum tracks at the same time.

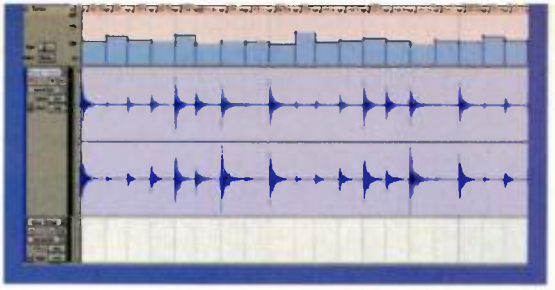
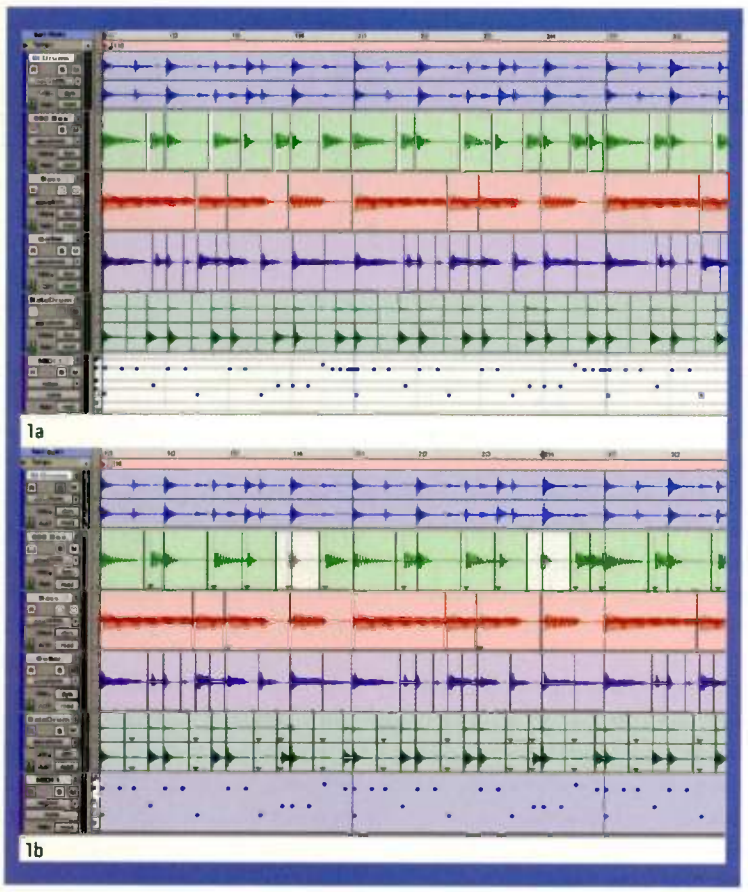


FIG. 2: This screen shot shows an example of a tempo map generated by a live percussion groove. The tempo for each 16th-note grid division can be seen next to each tempo-change marker.



FIGS. 1a and 1b: Here are several audio regions that have been edited using Beat Detective, with the groove from the Stereo Drums track (track 1) applied to all of the separated audio regions.

Groove Extraction

An important production skill for making parts groove well, particularly when working with elements from disparate sources—such as found loops, step sequencers, and live performances recorded at different times—is the ability to create and apply custom groove-quantize templates. Beat Detective allows you to lift the groove from one performance, save it as a template, and then apply it to other performances, giving you complete control over the feel of each track.

After you've set the beat markers for an audio or a MIDI selection, switch to the Groove Template Extraction mode in Beat Detective's Operation section. You don't need to perform a region separation beforehand, because the groove template is based on the position of the beat markers themselves, rather than on audio region start times. When you press the Extract button, you can either save the template temporarily to the clipboard or archive the groove template to disk in the Pro Tools Grooves folder.

From the Region Conform mode, you can apply the groove template to a selected audio performance, as long as its beats have already been separated into individual regions. Select Groove as the Conform mode, choose your groove template from the Grooves menu, and then press the Conform button to quantize the start of each audio region to the nearest beat or sub-beat of your groove template (see **Figs. 1a** and **1b**, and **Web Clips 1a** and **1b**). To apply a groove template to a MIDI performance, you will need to use the MIDI Groove Quantize window. Any groove template created in Beat Detective will appear in the MIDI Grooves menu as well.

The Region Conform mode and the MIDI Groove Quantize window provide a Timing parameter for setting the strength of the groove template, which determines how strongly the selected events will be pulled toward the groove. That control is essential, because performances that are too tightly locked together can sound unnatural. By using the Timing control, you can play with different percentages of the groove across

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The Art of Podcasting

By David Battino

Just when it seemed that commercial radio couldn't possibly become more corrupt or boring, along came podcasting—Internet radio by and for the people. And with it comes unprecedented opportunities for electronic musicians and music fans.

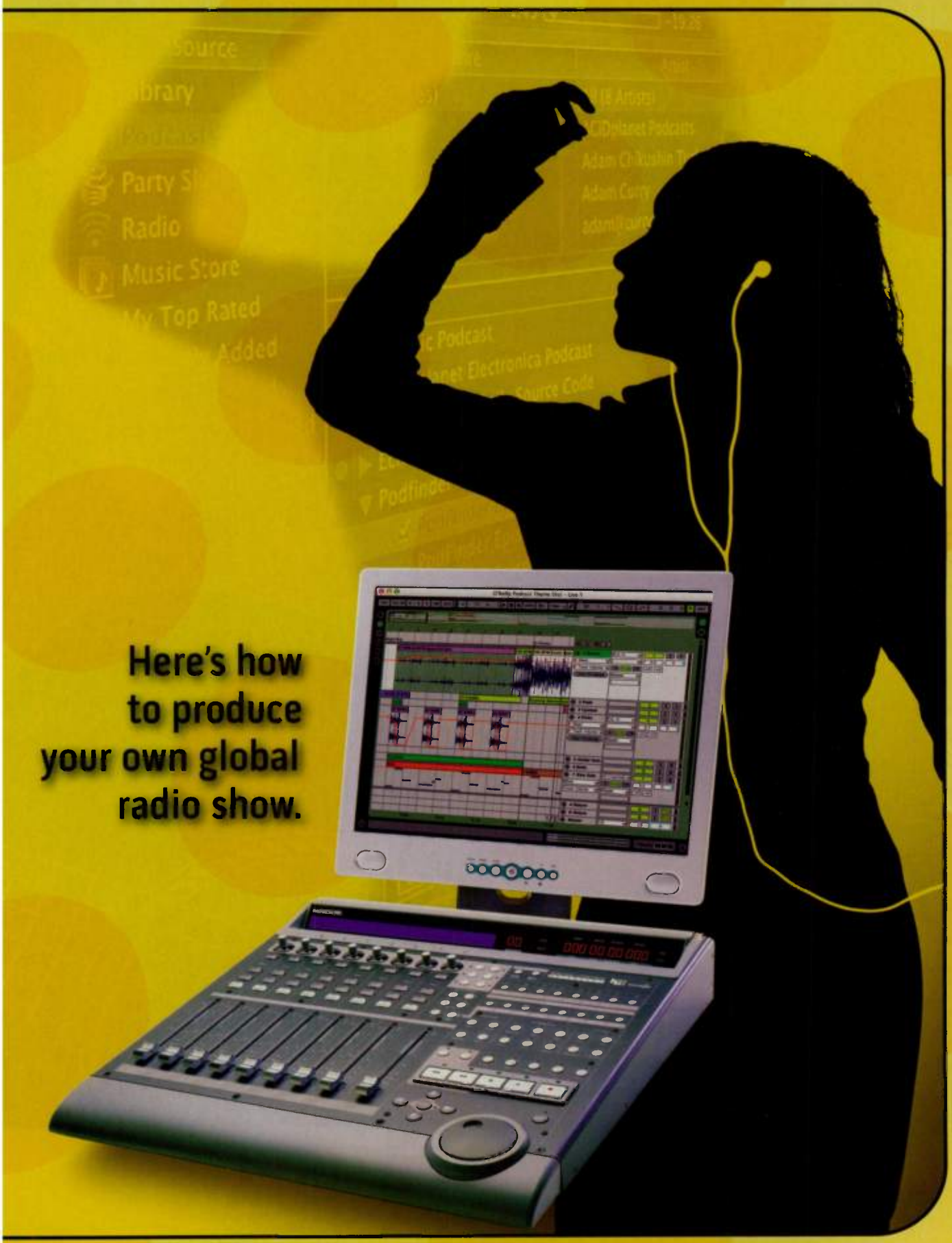
The word "podcasting" is a combination of "iPod"—the ubiquitous portable music player—and "broadcasting." But you don't need an iPod to participate, and the listening experience is more like subscribing to an Internet radio show with a TiVo (if that were possible) than dialing in a broadcast.

Podcast producers upload audio files (usually MP3s) to the Web, along with a text file containing background information about the show and links to the audio files. When listeners load the URL of the text file—for example, http://www.example.com/joes-show.rss—into a program called an *aggregator* or a *podcatcher*, they're given the option to subscribe to the series of audio files.

Once the listeners subscribe, the podcatcher software checks the online text file once a week or so for new links. If it finds some, it downloads the corresponding audio files automatically. The listeners can then play the files on their computers or transfer them to portable players like the iPod. Additional data in the text file allows the player to display enhancements such as cover art, the producer's URL, and extended comments about the episode.

Just as TiVo ensured that there'd always be something to watch when you get home, podcatchers fill your computer with interesting music and radio-style talk shows from around the world. Unlike TiVo, though, podcast subscriptions and podcatchers are still free, and anyone with an Internet connection can create a show.

Indeed, searching Google for the phrase "how to" plus "podcast" returns more than 12 million hits—phenomenal for a field that's barely a year old. As with many crafts, the technical steps are relatively simple; artistic success comes from learning what works aesthetically. In other words, there are 12 million sites that can tell you how to record and distribute a podcast; in this article, I'll concentrate



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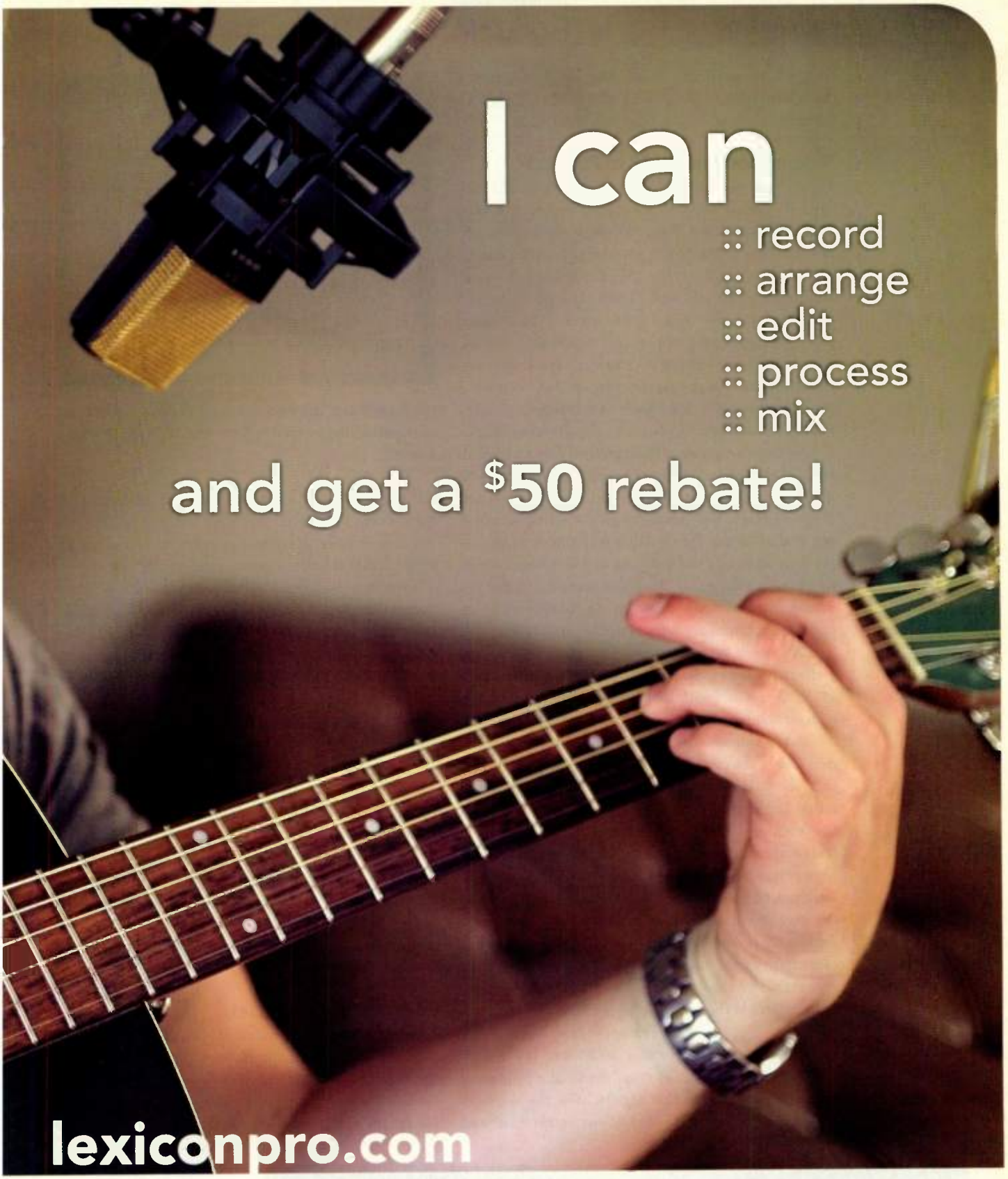

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on the fun part: doing it well. That said, I devoured a significant number of those 12 million sites. Visit www.emusician.com for helpful links (see **Web Clip 1**).

Finding and Listening to Podcasts

Before jumping into podcast production, grab a podcatcher program and take some time to check out what other producers are doing. Three leading podcatchers are iTunes (Mac/Win), iPodder (Mac/Win/Linux), and iPodderX (Mac/Win). (See the sidebar "Contact Information" for URLs of all software, podcasts, and other resources mentioned in this article.) iTunes is the most popular, netting more than a million subscriptions within two days of adding podcatching capability in version 4.9. It also lets you preview podcasts before deciding if you want to subscribe. (That's an important reason to make sure the beginning of your audio file is enticing.)

All three programs contain podcast directories with scads of entries, but there are numerous Web sites with podcast directories as well. Podcast Alley, Podcast.net, Audio Weblogs, and Yahoo are good starting points. If you find a link you like on a directory site, you can simply copy and paste the link into a podcatcher program to set up a subscription. The link is usually attached to a small button labeled RSS or XML. In iTunes, you access the subscription entry form in the Advanced menu.

One of my first stops was at the Daily Source Code podcast, hosted by "podfather" Adam Curry, the former MTV VJ credited with inventing podcasting. This is a podcast about podcasting, so you'll pick up lots of tips.

Curry's production values are head and shoulders above the ones in the typical mumbling podcast talk show. He makes extensive use of background music and sound effects, and has a voice that sounds confident yet personal. Although Curry obviously feels comfortable with the mic, his recordings don't have the polished sound of a traditional radio show. Background noises creep in, he rambles at times, and the bright, compressed sound makes me think of a Finalizer cranked a few notches too high. But that informality adds to the personable vibe. One could argue that the overpolished sound of commercial radio is part of the reason it feels so sterile.

Podcasters can learn a lot from radio, so I interviewed several accomplished radio producers for this article. (See the sidebars "Take Me to Your Leiderman" and "Hitting the Posts," as well as **Web Clip 2**.) Ironically, I discovered one such producer through his show's podcast. Echoes, at www.echoes.org, is a beautifully crafted interview show featuring electronic music.

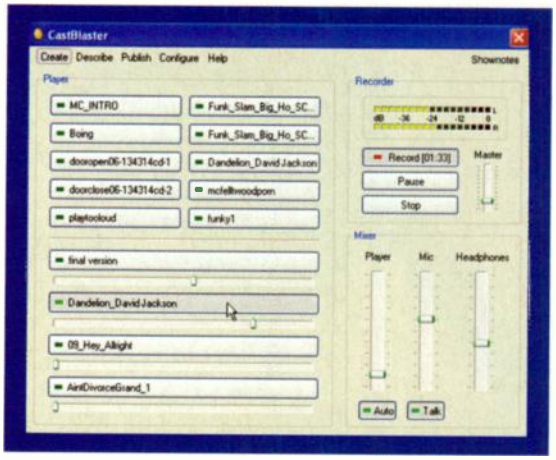

FIG. 2: CastBlaster is a Windows podcast-creation program based on triggering clips in real time rather than arranging them on a timeline.

Another electronic-music podcast I like is called Spacemusic, which delivers an hour of smoothly cross-faded indie music every week. The host, TC, has a great time presenting the music and interviewing other artists (in his thick Dutch accent). He actively solicits original tracks from listeners.

Independent musicians have another outlet in Slashdot Review. That podcast juxtaposes a spoken recap of hot topics from the popular News for Nerds site with a full track from a non-RIAA band.

Give the world an open mic, and you'll get other strange juxtapositions as well. One podcast I found (www.rocket15.com) featured a guy named Chaz driving around Louisville in a VW Bug, muttering into a digital voice recorder. Film composer Fumitaka Anzai (www.anz123.com/English) found a way to stuff so many images into his podcast feed that it turned into an animated movie.

Gearing Up to Podcast

To make a podcast, all you need is an audio file and an Internet connection, but additional gear offers more flexibility and sound quality. For example, it sounds as though Chaz the "Bugcaster" simply dragged the WMA file off his voice recorder, converted it to MP3, and uploaded it. For a more polished vocal, you'd want to use a higher-quality microphone, a pop filter, a compressor, and a USB or FireWire audio interface on your

FIG. 1: HHB's new portable recorder, the FlashMic, is well suited for remote recording. The unit includes 1 GB of flash RAM and a Sennheiser mic capsule.

computer. For remote recording, a battery-powered digital recorder such as the Edirol R-1 or the M-Audio MicroTrack would be a cleaner choice. HHB just announced an intriguing portable recorder that combines a gigabyte of flash RAM memory with a quality Sennheiser mic capsule (see **Fig. 1**).

For recording telephone interviews (interviews are a popular podcasting genre), I use a JK Audio QuickTap. This tiny device connects between my phone's handset and base, providing an output jack to my Korg PXR4 flash RAM recorder. I have to do a lot of cleanup on the recordings, though, because of the abysmal sound quality of the United States telephone system. Many podcasters use Skype or iChat telephony instead, though routing the audio signals to your recorder requires some fancy virtual cabling. There's a comprehensive tutorial at ITConversations.com, a leading tech interview site.

Speaking of voice-overs (see **Web Clip 2**), here's a tip from producer Spencer Critchley: "Match your vocal sound to the aesthetic identity of the program. Be aware that the big, booming DJ voice has become a cliché; I think it grew out of the fact that people tend to associate authority with big chests and deep voices (it's an ape thing), the availability of compressors and equalizers to exaggerate the effect, and the tendency DJs have to be vain. I'd suggest starting with a good mic, good mic technique, and moderate compression to achieve a more natural sound that still stays forward in the mix."

And don't forget the cleanup. Echoes producer John Diliberto reveals, "That seven-minute feature that has three minutes of talking in it? That's edited down from an hour or so of interview material."

Soft Focus

On the software side, a multitrack audio sequencer such as Pro Tools, Acid, Sonar, Live, or GarageBand will help you create and lay out the sonic elements in your show. Another benefit of those programs is that they come with royalty-free audio loops. As a podcaster, you're not allowed to distribute copyrighted material without permission.

FIG. 3: If you encode your podcast audio in AAC format, you can insert colorful bookmarks in the file that show up in iTunes and compatible iPods. Few other portable players handle the AAC format, though.

FIG. 4: Podcast producer TC adds a cue list inside the <description> tag in his RSS file, separating the lines with <br> tags. When you click on the Info button in iTunes, the items line up.

One podcast I found, called the Overnightscape, has an interesting work-around to that limitation, using a MadWaves algorithmic synthesizer (www.madwaves.com) to generate royalty-free background music in real time. There are also many artists who will allow you to play their music in exchange for promotion. Three places to find them are the Association of Music Podcasting, Creative Commons, and the Podsafe Music Network. It's easy to submit your own music at these sites as well.

Dedicated podcast-creation programs are springing up all the time. For Windows, there's CastBlaster (see **Fig. 2**), Propaganda (see the sidebar "Podmeisters Sound Off"), and ePodcast Creator. The latter is also being ported to the Mac. In addition to organizing or triggering audio clips, those programs export MP3s and the specialized text file that defines the podcast. They can also assist with file upload.

Compressing the Audio File

Your next step is to create the data-compressed audio file. For voice-only programs, consider using mono and a bit rate of 64 or even 32 kbps instead of the standard 128 kbps. Because of the way data compression works, mixing a stereo signal to mono doesn't shrink the file size as it would with uncompressed audio; the bit rate determines the file size. That means a 64 kbps mono MP3 will sound similar to a 128 kbps stereo one, except for the lack of

spatial information. If you have a choice of sampling frequencies, stick with integer multiples of 11.025 kHz (22.05 and 44.1 kHz, for example). Some players "chipmunkize" files at other rates.

Also experiment with filtering out high and low frequencies before compressing the file so that the encoder doesn't squander bits on sounds that your listeners won't hear anyway. For example, analog telephone lines in the United States top out at 3.2 kHz, so you could prefilter phone interviews heavily. For music podcasts, try joint stereo encoding and a 128 kbps rate. Daily Source Code encodes at 96 kbps and sounds reasonably crisp.

Make sure to fill out the ID3 tags for your MP3s so that listeners and podcatchers can organize them. You should specify at least the title, artist, album name, and comments. Ideally, you should also include a contact URL in one of the fields. Adding the show number or date to the name field helps.

In iTunes 4.9, Apple added a slick feature that lets producers add chapter markers to audio files (see **Fig. 3**). The drawback is that you need to save your file in AAC format (M4A) rather than MP3, and AAC playback support is not nearly as common. Spacemusic host TC reported that 30 percent of his listeners unsubscribed after he switched to AAC, so he switched back. If you do opt to use AAC (perhaps in parallel), check out the shareware program ChapterToolMe, which is the easiest way I've found to add chapter graphics.

CONTACT INFORMATION

PODCASTS	
Daily Source Code	www.dailysourcecode.com
Echoes	www.echoes.org
Overnightscape	www.theovernightscape.com
Slashdot Review	http://slashdotreview.com
Spacemusic	www.spacemusic.nl
PODCAST DIRECTORIES AND HOSTING	
Audio Weblogs	http://audio.weblogs.com
Liberated Syndication	http://libsyn.com
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Podcast Alley	www.podcastalley.com
Podcast.net	www.podcast.net
Yahoo	http://podcasts.yahoo.com
RESOURCES, READINGS, AND ORGANIZATIONS	
Association of Music Podcasting	www.musicpodcasting.org
Creative Commons	http://creativecommons.org/find
Podcasting Hacks (free chapter)	http://digitalmedia.oreilly.com/2005/09/07/hosting-podcasts.html
Podsafe Music Network	http://music.podshow.com
SOFTWARE	
Apple Computer iTunes	www.apple.com/itunes
BoKu Communications CastBlaster	www.castblaster.com
Industrial Audio Software ePodcast Creator	www.industrialaudiosoftware.com
iPodder (open source)	http://ipodder.sourceforge.net
iPodderX (open source)	http://ipodderx.com
MixMeister Technology Propaganda	www.makepropaganda.com
NotePage, Inc. FeedForAll	www.feedforall.com
Reinvented Software Feeder	www.reinventedsoftware.com
Romain Bossut ChapterToolMe	http://rbsoftware.net

Just Say Yes to RSS

After switching back to MP3, TC found a clever way to restore a table of contents to his podcasts: he added it to the text file that accompanies them, inside the <description> tag. Given the format of his show (an hour of seamless music from independent artists), that was invaluable for helping listeners zoom in on individual songs (see **Fig. 4**).

The step that gives podcasting its unique characteristics is its companion file. That companion file is what transforms an ordinary audio file into a podcast. It's written in a format called RSS (Really Simple Syndication), a "dialect" of the XML language. As I mentioned, there are tools that will generate that file for you, so you don't need

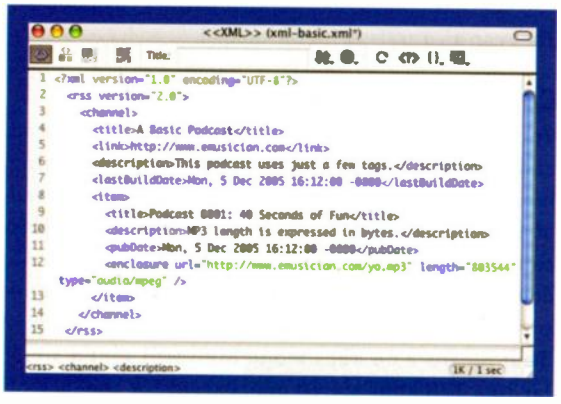

FIG. 5: This screen shot shows the most basic RSS file you can use to publish a podcast. Note that the URL for the MP3 is bogus, but when I changed it to point to an actual MP3 and uploaded the RSS file, iTunes was able to find the audio.


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to know the inner workings of XML, but it is instructive to see how it works. Bart Farkas's book, *Secrets of Podcasting* (Peachpit Press, 2005), has the clearest explanation of RSS for podcasting that I've found.

Fig. 5 shows a basic RSS file. If you've ever selected View Source on a Web page, the syntax should look familiar. Note that this example podcast has only one episode, denoted by the <item> block. To add a new episode, you'd add a new <item> block and modify the dates. For maximum utility in podcatchers, especially iTunes (which has its own RSS tags), you'll need to add additional tags. Take a look at some of the RSS feeds online for ideas. The Spacemusic feed, for example, is at http://spacemusic.libsyn.com/rss. You can check your RSS files for proper syntax at http://feedvalidator.org.

Although the easiest way to create the RSS file is to use a dedicated podcasting program like Propaganda, there are some alternatives, such as FeedForAll and Feeder. While I was learning the concepts of RSS, it was useful to take an experimental approach. I uploaded some 5-second MP3s to my site, created a simple RSS file in my HTML editor, uploaded the RSS file, pasted its URL into iTunes, and then subscribed to the podcast to see what happened. I then added or changed parameters in the RSS file and uploaded it again. That process let me see quickly what effect the RSS data had on the way iTunes displayed the podcast, because I didn't have to wait for long MP3 downloads.

Hosting and Promotion

If your podcast becomes popular, you could get hammered for bandwidth fees, so it's prudent to figure out where to host your audio files. (They don't have to be in the same location as the RSS file.) There's a good summary of the current options in *Podcasting Hacks* by Jack Herrington (O'Reilly, 2005). Fortunately, that chapter is free at http://digitalmedia.oreilly.com/2005/09/07/hosting-podcasts.html. Be sure to check out the links at the bottom of the page called "Ten Tips for Improving Your Podcasts" and "What Is Podcasting."

Speaking of freebies, Ourmedia.org provides free podcast hosting, although you'll have to license your music under a Creative Commons license. For more control, try Liberated Syndication, which currently offers unlimited bandwidth for $5 a month. People with .Mac accounts can use them to store audio files; Apple deals with bandwidth excesses on a case-by-case basis. If you're an Acid user, check out the ProZone membership at www.acidplanet.com. For $49.95 per year, you get unlimited bandwidth and other goodies.

Once your podcast is online, you can promote it by submitting it to directories such as Podcast Alley, Audio Weblogs, Odeo, and iTunes (through the iTunes program itself). Be sure to add an RSS link to your site as well.

Creating a Podcast Soundtrack

As fate would have it, I recently had the chance to write the theme music for O'Reilly Media's new podcast Distributing the Future. The company—where I work as editor of the Digital Audio site—requested an intro, an outro, and a collection of "interstitials" to use for transitions. I started by asking some questions:

1. What are some topics that you plan to cover in the show?
2. What style of music are you looking for?
3. What emotions do you want the music to convey?
4. What duration should the segments be?
5. When do you need them?
6. Do you also need a background loop that could be extended indefinitely? (Think of a traffic report on the radio.)

The show's producer and host, Daniel Steinberg, is also an editor at O'Reilly, but he used to be an on-air personality at a top-rated Cleveland radio station. He surprised me by giving open-ended answers, which I've paraphrased here:

1. Science and technology.
2. Your choice, but make it accessible.
3. A range, from excitement to worry.
4. I'd like 30 or 60 seconds for the intro and the ending, and 10 to 20 seconds for the interstitials.
5. Whenever's convenient, but the sooner the better.
6. I like this idea.

To begin, I developed a few themes on the portable keyboard in my living room; I didn't want to get distracted by computer editing. Back at the computer, I launched Ableton Live 5 and reperformed the theme using piano and horn samples from the Garritan Personal Orchestra. I also made a more aggressive theme with drum loops and an echoing sine-wave melody inspired by the *X-Files* theme.

Producer Steinberg liked the second theme better. He recorded a rough version of his introductory monologue over it using Apple Soundtrack and sent me an MP3. I noticed that the musical intro (called a *ramp* in radio) went on too long before the bombastic drums came in. I also noticed some weird sonics. (I'd mixed the theme on headphones late at night—bad idea.)

Comparing the new mix with my previous version, I realized that I liked the first one better in some spots. It sounded cleaner, because I'd overdone the effects

in the second version. So I reduced or eliminated the reverb using automation envelopes, added a few more transition sounds (an extra snare hit here and there), and shaped the volume of individual tracks with envelopes to make them swell and ebb (see **Fig. 6**). I was reminded of the line from *The Little Prince:* "Perfection is achieved not when there is nothing more to add, but when there is nothing left to take away."

I then made 20 variations of the theme using different instruments. I also created some submixes of the rhythm tracks to use as loops. When Steinberg sent me the next iteration of the show, I was reminded of those PowerPoint presentations that use every possible transition. I suggested he pick just one or two of the theme variations and use it throughout. I also made some suggestions about balancing the voice levels and cleaning up the audio in the interviews.

After the project wrapped up, I asked Steinberg to reflect on what he'd learned in his long journey from radio to podcasting. He sent some thoughtful comments, which you can read at www.emusician.com (see **Web Clip 3**). To hear the Distributing the Future podcast, visit www.oreillynet.com/future. Notice how it follows a tried-and-true format: during the ramp (intro), Steinberg announces the name and the focus of the show. That section will stay the

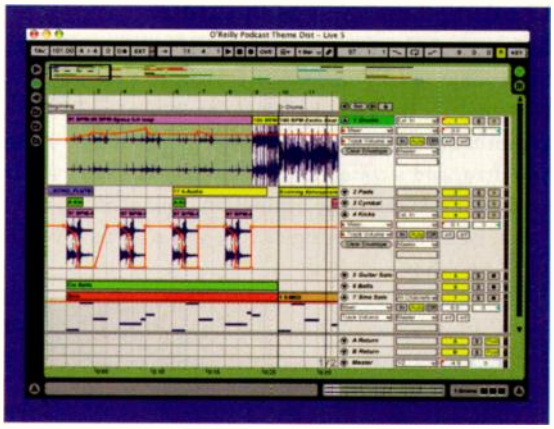


FIG. 6: My podcast theme used just eight tracks, but I still did substantial carving with volume and reverb envelopes to avoid overwhelming the announcer.

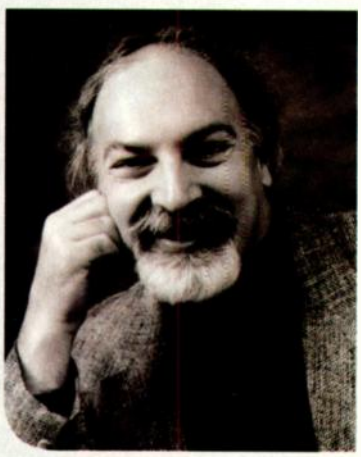
HITTING THE POSTS

Echoes is a national radio show about innovative music and musicians, and it makes elegant use of music to weave the narrative elements together. (The show is also available in condensed podcast form at www.echoes.org.) I asked producer John Diliberto and engineer Jeff Towne how they structure their shows.

"The whole idea is to create an underscore," says Diliberto. "It's almost like doing a movie. Yes, we're talking about the music, but the music itself is also an underscore to what's being said."

Towne adds, "And that might be a little show-offy, but it sounds better. It's not like, 'Oh, the voice stopped, so I'll turn up the music.' I always get a little frustrated when I hear that on other radio shows, when there's an opportunity to say something with the music underneath the narration and then make a dramatic statement once the music's in the clear."

"We do try to hit those posts," Diliberto continues. "The music's building underneath, the person's talking about it, and then suddenly—boom!—it's out there. We spend a lot of time trying to hit that right moment when it's going to have the biggest impact after somebody's talking."



Renowned interviewer John Diliberto produces the elegant Echoes podcast and its radio show heard nationwide on FM stations and XM satellite.

"It actually takes a little time and energy to arrange that," Towne laughs. "It's not quite as simple as, 'We'll start the track and move it around till it comes up right.' There's often a lot of pushin' and shovin' and clippin' and twistin' and trimmin'. But that's what you should do. At least, that's what we want to do."

I asked how *Echoes* got away with using copyrighted music in its podcasts. "We're covered under Fair Use," Diliberto explained, "because we are commenting on the music. You'll notice there is rarely a music track in the clear that's more than 30 seconds long; in fact, I'd say 20 seconds is probably the average. So we're never playing a whole track on the podcasts."

Towne adds, "We have an online service that we do indeed pay performance royalties on. But obviously podcasting is a little murky. And that's the reason we don't podcast the [entire] show."

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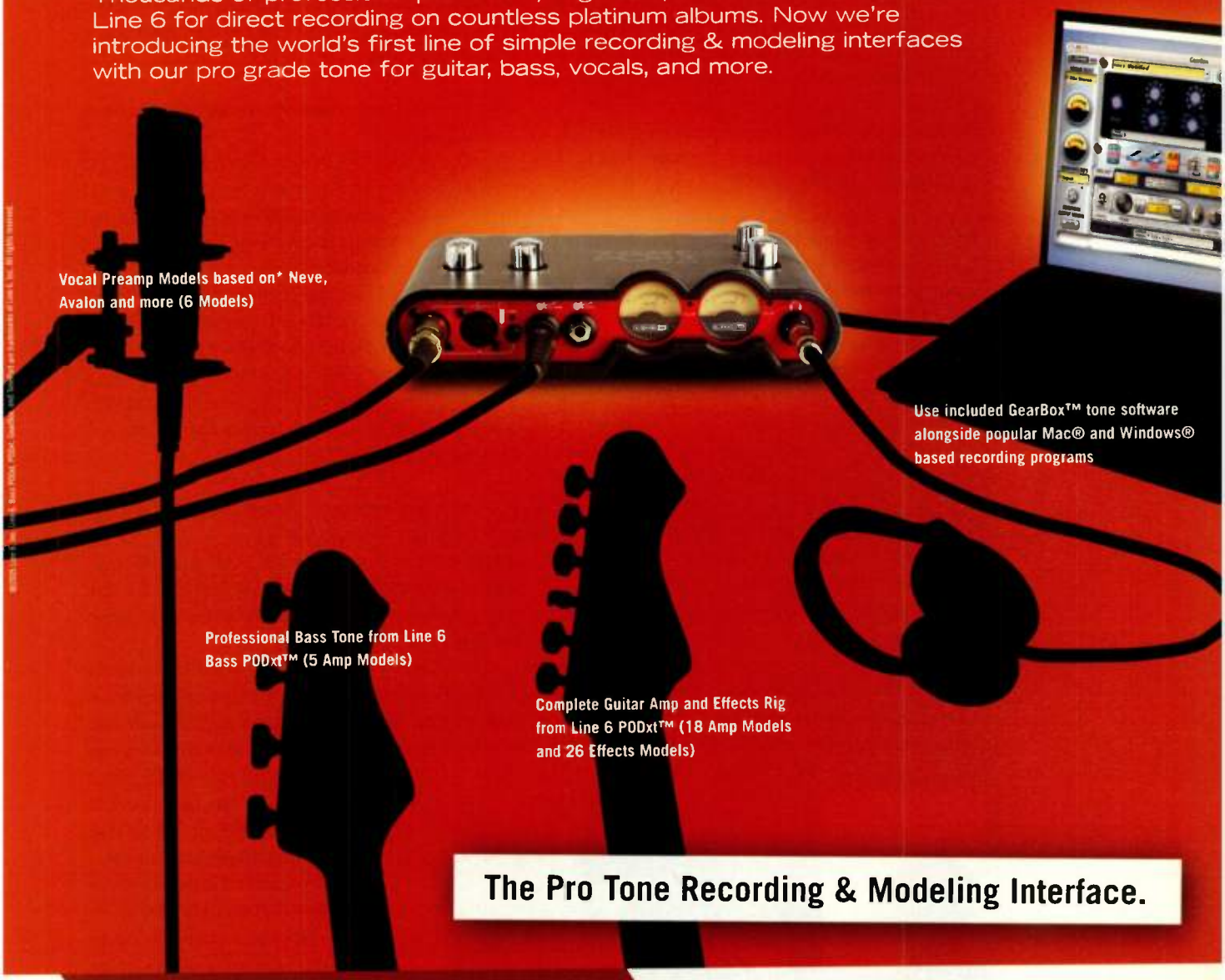

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- 96KHz mode, 32 bit processing

LINE 6

TAKE ME TO YOUR LEIDERMAN

Emmy Award–winning composer BJ Leiderman (www.bjleiderman.com) has written the theme music for National Public Radio's *Morning Edition*, *Weekend Edition*, and *Car Talk*; Public Radio International's *Marketplace*; and countless jingles for Coca-Cola, General Mills, HBO, MTV, and more. Soon he will release a career-spanning CD called *Life at the Bottom of the Dial*. I spoke with him about radio, podcasting, and the art of theme music. You can listen to the full interview in podcast form at www.emusician.com (see Web Clip A).

What's involved in making theme music for a radio show?

Usually clients think of it in terms of a package. They think of a main theme, which usually has talking on top of it now *[laughs]*; a closing theme, which is usually a longer variation of the main theme so they can talk right up until the end-melody statement; and a whole package of *bumpers*, which are short 2-second, 5-second, or 10-second things—they're also called *stingers*—based on the main theme.

Jay Kernis, who was one of the original producers of *Morning Edition*, invented something called the *bleeble*, which is nothing more than a longer stinger, but it's a repeating phrase. He probably invented the original loop; it was way before sampling. And usually the local stations talk over that, too. The same idea can be applied to podcasts, if you want to make your podcasts sound more professional and radio-like.

What is it that makes your themes so catchy?

I used to say that I hate to say it, but . . . it's the melody. Let's face it—when clients want a theme, they want something that brings listeners back and has an identity. And it's usually the melody that does that. If not, then it's an aggressive rhythmic structure or a sound effect. For example, with *Marketplace*, which starts with just that bell—that's all they'd need to play. It's so identifiable now.

When you're working on a melody, how quickly do you have to state your theme?

It's got to be on the short side, because someone's got to start talking soon. And that's been my biggest pet peeve about the whole thing. It's not simply because I want people to hear three minutes of my music. I do, but there's a different place for that—my CD.

It's the music that sets up the emotion of the show. Good producers realize that even if they have to cut 15 seconds of voice-over, they can really sock it to the audience emotionally and put something in their heart that does a lot more than a voice-over. One of the famous jingle-writers in New York once said, "Nobody hums the announcer." And it's absolutely true.

What are some ways to use sound to connect the elements of a story and make it flow?

One of the best examples of how to do a radio show, not necessarily a music show, is *This American Life*. That show is a work of art from start to finish. And using music in an unexpected way—that's what I love most of all.

There's an art to picking a piece of music that does a lot more than simply reiterate the emotion of the story. A great producer is one who will pick a piece of music that will take the feeling the listener has from that story and not only turn it up a notch, but also make it take a right turn. It should take the audience somewhere else, in their heads and in their hearts.

NPR pioneered that, so you've got to give them credit. Say you're sitting in your car, listening to a story. The story comes to an end, and the piece of music that's played blows your mind so much that you're left there in a puddle of mush in your car seat. It's like a tidal wave. You've got all these emotions at the top of that wave, and it's incumbent on that piece of music whether that wave goes forward and crashes to the shore or just settles back and becomes a little ripple.

BJ Leiderman's home studio contains mostly midline gear. His motto: "It's the music, stupid!"

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–Keyboard Magazine, March 2005

Then.

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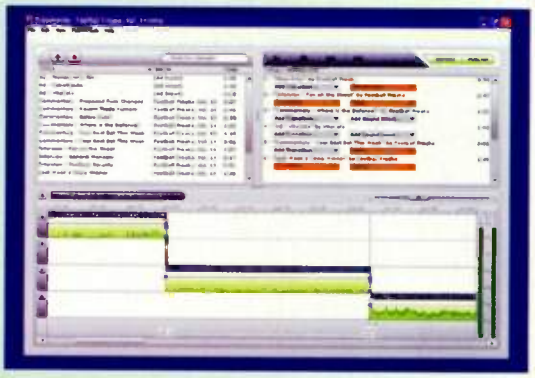
PODMEISTERS SOUND OFF

Here are some expert podcasting tips from Aaron Higgins and Dave Sampson of MixMeister Technology (www.mixmeister.com), a developer of beatmixing and podcasting software.

- Don't try to record your whole show all in one take. Your odds of getting a high-quality recording of high-quality content, organized in a high-quality manner are very low.
- Musical interludes between topics can be great mood setters, but if they go on for more than 30 seconds, you can lose the momentum of your show.
- If your first minute isn't fabulous, nobody will ever know about all the great stuff that comes later. Try to devote half your production time to making that first minute spectacularly interesting.
- Include a brief table of contents near the start of your show, so listeners know what to listen for and when.
- Give a preview of upcoming podcasts at the end of each recording to give listeners something to look forward to.
- Include a list of relevant keywords at the end of the text summary on your podcast page. That will help interested people find your show.
- If you have content with questionable production quality—a location recording with a lot of background noise, for example—don't use it. New listeners won't fight to hear those parts; they'll stop listening altogether.
- Make your podcast as short as you reasonably can. Most amateur podcasts drone on three times longer than they need to. Since skimming is much harder to do when listening to a podcast, make every single word count. Record your topics again and again until they are as tight as possible.



MixMeister Propaganda is a complete podcast production system for Windows, designed for ease of use. It handles everything from audio recording to RSS creation and upload.

same in every episode. After the drums hit, he uses the remainder of the minute to list what the episode will cover. Audio *stingers* delineate sections of the show, then the outro comes in. While it plays, Steinberg reads the credits, invites commentary, and looks to the future.

Radio Your Way

Podcasters can pick up many tips from well-produced radio shows. In turn, I asked Echoes podcast producer John Diliberto what radio could learn from podcasting. "Well, it's not what radio can learn—it's what radio is going to have to do to compete with podcasting," he replied. "Because it's going to get to a point where people don't want to wait until 10 o'clock at night to hear *Echoes*. They'll want to hear it whenever they want. The best way to do that would be a podcast. And radio is probably going to be heading that way in many regards."

Echoes engineer Jeff Towne agrees, "I don't bother to try to find *Le Show* on the radio anymore. I download the podcast and listen to that. But at the same time, when you get in the car, it's so much easier to turn on the radio than try to hook the iPod up to the stereo and find the podcast you want to play. So, it's a mixed bag. There's still an appeal to being surprised by radio, too."

Playing with that element of surprise is one of the great rewards of being a musician. Whether you're producing podcasts, promoting your music on them, writing theme music for them, or simply collecting them for rainy-day listening, you're sure to enjoy the dramatic opportunities they bring.

Podcasting will likely bring musicians new revenue opportunities too. "I don't think it's a coincidence that there are 'Buy It' buttons in the podcast section of the iTunes Music Store," says Towne. "Everything's free right now, but it couldn't be too hard to have a podcast aggregator that would hold passwords so that you can sign up and pay for the subscription. I don't think people would mind that if it were relatively affordable."

For years, the ultimate goal of many musicians was to get on the radio. Thanks to podcasting, we now have the power to produce our own radio shows and send them out to a worldwide audience. So give it a try—all you need is an Internet connection and an audio file. EM

EM WEB CLIPS

David Battino (www.batmosphere.com) is the coauthor of The Art of Digital Music *(Backbeat Books, 2005) and the editor of the O'Reilly Digital Audio site (http://digitalmedia.oreilly.com).*

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cakewalk

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MICHAEL HOLM

On His Game

By Maureen Droney

Talking shop with game composer Jesper Kyd.

Most people go to great lengths to ensure that their recording studios are quiet. But not so with composer Jesper Kyd. Sirens, car alarms, and traffic noise permeate his downtown Los Angeles loft studio, which has floor-to-ceiling windows that open to the symphony of the city several floors below.

That his studio feels like Manhattan is no accident. Kyd (www.jesperkyd.com), though a native of Denmark, is a recent, somewhat reluctant transplant from the Big Apple who has managed to locate himself on one of the few street corners in L.A. that has tall buildings, outdoor cafés, foot traffic, and a big-city feel.

Kyd (whose first name is pronounced "YES-per") is best known for his work done on aggressive action adventure games such as IO Interactive/Electronic Arts *Freedom Fighters* and the IO Interactive/Eidos *Hitman* franchise—for which he composes music that gets inside the head of a brutal assassin. In contrast to the violent subject matter of many of the games he scores, Kyd's personality is polite, serious, and somewhat shy; he has an almost bookish demeanor—a dichotomy that makes sense when you delve into his rich body of music. His roots are in the dance scene, and he can turn out action cues with the best of them. But he's also a serious composer in the classical sense, as comfortable with live orchestras and Eastern European choirs as he is with synthesizers, computers, and the latest software.

People are starting to take notice of Kyd's music, now found in many best-selling titles and in promotional videos for game companies including Activision, Microsoft, and Konami, among others. His score for *Freedom Fighters* won a Best Original Music Award from the respected GameSpot Web site (www.gamespot.com) and was voted a finalist for the Billboard 2004 Digital

Entertainment Award. *Hitman 2: Silent Assassin* received critical acclaim for Kyd's immersive soundtrack, including award nominations from the Internet Gaming Network (IGN), GameSpot, and GameSpy. His evocative blend of electronica, dark symphonic themes, and choral grooves in the Hitman: Contracts soundtrack has been called groundbreaking, and it won the award for Best Original Music in the 2005 BAFTA (British Academy of Film Television Arts) Games Awards (see **Fig. 1**).

The game-sound world—often compared to the Wild West, with no boundaries and an anything-goes mentality—is growing by leaps and bounds. Kyd, who has been working in the genre for more than 12 years, came in on the ground floor. Now also working in film, he brings a unique perspective to both mediums.

Were you originally a gamer, or were you just looking for a place to get your music played?

Actually, those things happened at the same time. As a kid, playing video games, I was always fascinated by the music.

Really? Wasn't it just beeps and blings then?

No—it was different and very experimental. I like to make music that you can listen to many times without getting tired of it, which is what you need to do with games. With an unsuccessful game soundtrack, people mute the music. That happens quite a bit, and it's what I try to avoid. My goal is to make the kind of music that will draw an audience to the game.

You're originally from Copenhagen. Did you study music there?

I'm very much self-taught, but I also studied classical composition on piano, guitar, and even choir. I wasn't a music major, but I had years of note reading. I also had a strong passion for film, and I've made and directed short films. I tried to go to film school, but we have only a couple in Denmark and it's very difficult to get in.

So instead?

I had a band with my friend Mikael Balle, and we were also in a "demo" group called Silents Denmark. We toured and got involved in the demo-scene events in Europe. A *demo* is a computer-generated audio-video presentation, in which there's an artist who does graphics, a musician who does the soundtrack, and a programmer who puts it all together into a demonstration of everybody's abilities. It's like a video game, except you can't play it. You just sit back and watch. [For more information on demo scenes, go to http://www.theprodukkt.com/demoscene.html.]

We did tons of them, then we started doing concerts as well, playing for 3,000 to 5,000 people. It peaked for us around 1993. We felt we'd done something really good, and we decided that the next step was games. So, with a group of other people, we started a game company, and came to the United States. We were in Boston, then Hollywood, and then New York. At that time, I decided to stay on in New York and launch my studio, and they went back home and started the *Hitman* games.

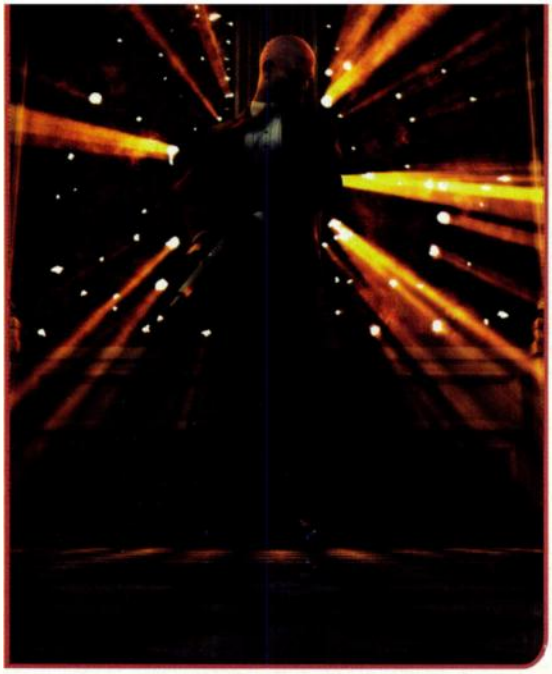

FIG. 2: Kyd's score for the upcoming *Hitman: Blood Money* is pretty evenly split between symphonic and electronic elements.

But you stayed involved as the composer.

Yes. Now, not only do I compose, but I also work with game developers to come up with the systems to implement the music. I do much more than just make the music, because I have a passion for creating the best soundtrack possible—and the best interactive music experience.

What does your experience tell you about the effects that music has on a game?

I've been shouting for a long time: we need better game music! The effect that a good soundtrack can have on a title is huge, but too often, it's still secondary. A rich, entertaining soundtrack creates a deeper, more connective experience. It makes the game more addictive; you actually want to go into the game world to be immersed in the music. The *Grand Theft Auto* series music is a good

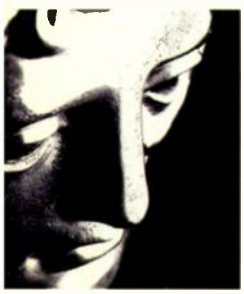

FIG. 1: Kyd was honored with the 2005 Best Original Music Award from the British Academy of Film Television Arts (BAFTA) for his work on the *Hitman: Contracts* soundtrack.

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example. Sometimes I play those games just to be in that world and listen to the music. That's a successful soundtrack.

What do you mean by "implementing" the music?
That means deciding when the music should play, how many times it should play, how it should fade in and out, which events in the game trigger what music, and when to have silence. It's building the atmosphere and the emotions of the game so that it's cohesive and entertaining instead of being annoying. It's a very important part of the process. If it's not implemented correctly, even a very good soundtrack won't be as effective as it could be.

So some composers just hand in their music and let other people implement it. But you prefer to be directly involved.
Yes. Because no matter how good your music is, if someone loops it 20 times in the wrong place, it won't sound good.

How do you work with people to implement your music?
With the *Hitman* games, I'm very involved with the team at IO in designing the way the music should play. We test, level by level, to see which ideas are good and which need to be changed.

I often go to Denmark to work with them, but we also email and talk on the phone. A lot of time is spent just playing the game, and then coming up with new ideas to tweak the music and make it as interesting as possible. New ideas always come to mind when you're playing the game over and over. Fortunately, I enjoy playing the games.

Do you feel that your music is part of the overall sound design?
Although I do lots of orchestral music, my roots are in electronic music. And in electronic music, the sound design always comes through.

Your music is very emotional, but some of it is also groove- and dance oriented.
Yes. Those are the extremes that I like to mix together.

How would you describe the score for your latest game, *Hitman: Blood Money*.
That was a big one, because it was a combination of electronic music and symphony. There was a big, wide spectrum of musical styles. It's difficult to mix the two in a progressive way. The orchestra is usually the main musical style, with a little electronic in the background. Or the electronic is the main component, and you have a bit of strings on top. I wanted to even it out to 50-50 (see **Fig. 2**).

It's a mix of different elements, with a 90-piece orchestra and a 60-piece choir, both of them recorded in Budapest, Hungary. The orchestra there has awesome players. They're not as precise as the players in Hollywood, but they are very expressionistic. They have their own kind of sound.

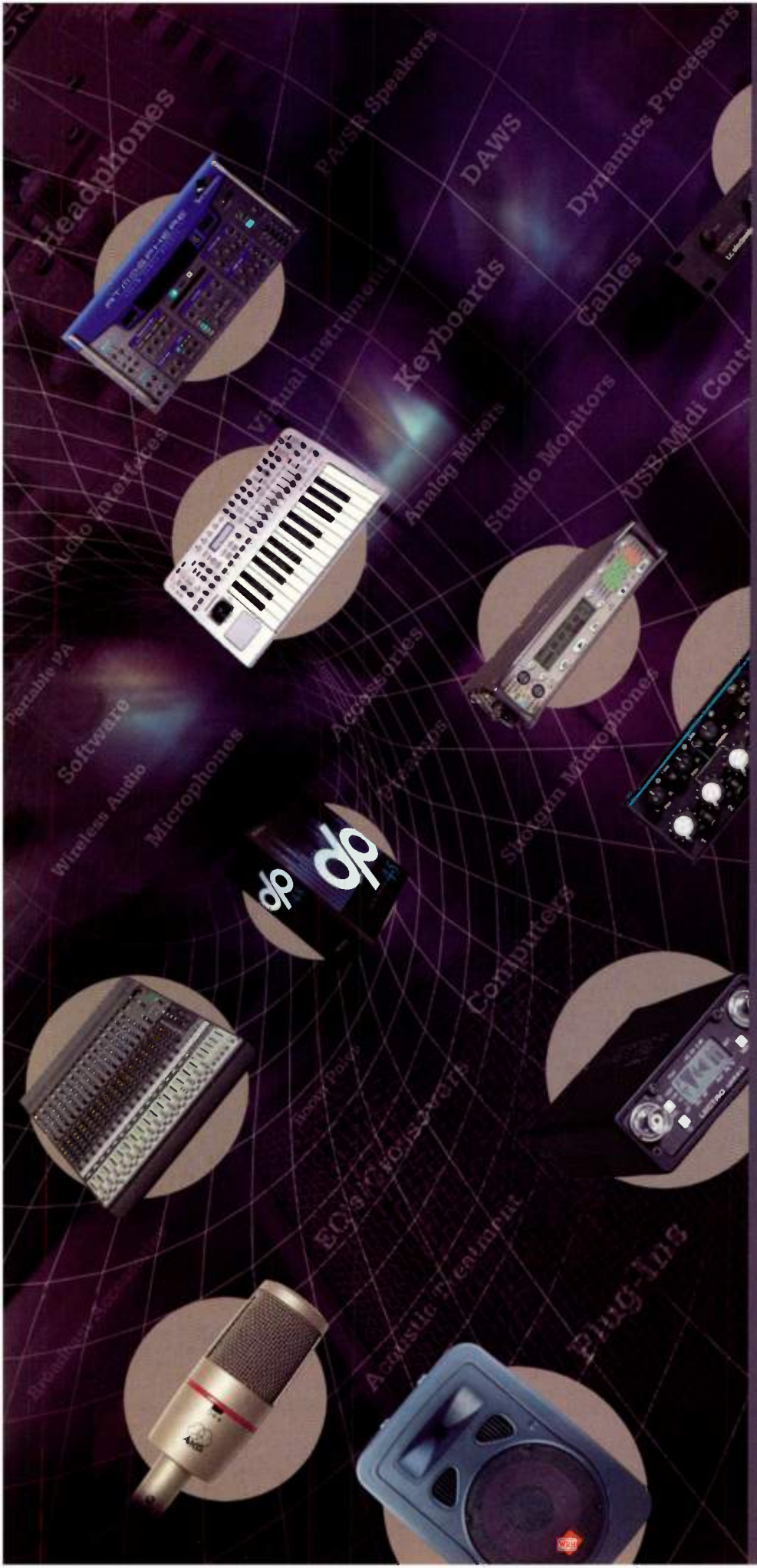
FIG. 3: Kyd in his L.A. studio, which features six computers, numerous keyboards, and a Yamaha 02R as its nerve center.

MAUREEN DRONEY

For the orchestra, do you work with an arranger and a copyist?
Yes. Arranger, copyist, conductor, translator. For big performances, I gather a team. On *Freedom Fighters*, for example, the lyrics are sung in an ancient language called Russian Latin. I used a French poet to write the lyrics, which she did in beautiful poems. Then we had them translated into Russian. For *Robotech: Invasion* and *Hitman: Blood Money*, we had a lot of Latin. I wrote all the lyrics and had them translated into Latin.

Do you know Latin? Did you know how it would sound?
No, not much. *[Laughs.]* The translator had to move things around to make sure it all made sense.

Are you nervous when you work with orchestras and choirs?



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Freedom Fighters was nerve-wracking, because it was electronic music mixed with dance music mixed with a Latin choir. That made me nervous because, with electronic music, you can't tweak things—it has to work on the spot; the music just plays, and the vocalists have to sing to it.

Composing the scores for the *Hitman* series has helped establish Kyd as a top-level game composer.

With the *Hitman* games, you show the personality and thoughts of the main character, Agent 47, through the music. You show what he's thinking and feeling internally, rather than using music that only gives the audience an external sense of what a character is about.

Yes, I score more for the personality and the spirituality of the character. And the *Hitman* series is more about a mood setting and about how the main character feels rather than how we perceive him.

In games, you have the opportunity and the creative freedom to do those kinds of things. You can do it in film, of course, but then sometimes you're a slave to the image, and every frame has to fit with a little cue here and there. With a video game, every time you play it, you can play it differently, maybe four or five different ways. Of course, to do that, you can't score 30 hours of music. Even if you did, you can't make music that will fit every single element. There's always a new way for the player to do something, and when you're scoring, you have to keep all of that in mind.

In the *Hitman* series, there are always lots of different ways you can complete the game. So I decided to pull back and score with the emotion and atmosphere of the game. That way, if a player does something different, it won't sound like something is wrong, or missing. It will still have the *Hitman* feeling.

Obviously, you have action moments, tension, and suspense. You have to move around and be interactive. But in general, it's important to follow the path of the music that gives the correct atmosphere.

You've just finished scoring a horror movie called *Stranger*. How is scoring for a film different than scoring for a game?

JESPER KYD: SELECTED CREDITS

Hitman: Blood Money (Eidos, 2006)
Splinter Cell: Chaos Theory (Ubisoft, 2005)
Robotech: Invasion (Take 2, 2004)
Hitman: Contracts (Eidos, 2004)
Freedom Fighters (Electronic Arts, 2003)
Hitman 2: Silent Assassin (Eidos, 2002)
Hitman: Codename 47 (Eidos, 2000)

When you're scoring for a movie, it's more specific. Because you have a finite picture, you know what works and what doesn't. With games, you're never quite sure. In movies, you do a lot of small bits and pieces for specific scenes. With games, you do more general, atmospheric tracks and try to convey moods.

How do you start composing for a game project?

I play the game a lot, and I think about what the developer is trying to express with the game. I'm looking for what that core is.

What are you composing to?

Most often to very early versions, which have minimal graphics and no sound—sometimes only skeletal structures. I just have to imagine everything and what would be appropriate. That's different than working on films, in which you can see how the movie is going to look. Also, a film often has temp music, or at least some kind of direction, because the music needs to follow the scene.

In video games, sometimes you barely have anything to refer to. For the first *Hitman* game, I wrote the entire score without seeing a single screen shot. I had only a background story and a few character sketches, nothing that gave me an idea of what the game was going to look like.

So the more material you have, the easier it is?

Well, when you have more to sink your teeth into, you can tell if the music fits or not. With a movie, you know if it's completely off. With a video game, you have to be more abstractly creative.

What do you write first?

I like to get the themes right. That sets the mood of the track, and you can follow that mood.

How long are the pieces?

It depends. With games, people sometimes ask you for a 30-second suspense cue here or a 15-second stinger there. But for the *Hitman* games, we always focused on making music that was longer. There are a lot of 6- or 7-minute tracks. I think that's a good way to do it. When everything is short, you never get to enjoy the music. And what can you say in 30 seconds? In *Hitman*, we have progressions that start somewhere, go through A and B themes, and come back with a big choir on top.

That's what I like to listen to, so that's the perspective I take. I'm always in the perspective of the game player. It has to fit the game, of course, but it has to be enjoyable to listen to.

Do you have to deal with the memory issues, or is that someone else's department?

I do have to think about that, but not so much anymore. With all the different compression formats these days, you can have big soundtracks. It was different when soundtracks were chip based. Obviously, there were a whole set of limitations then. But now that music is CD based, the challenges are more about the way the music interacts within the game, and the way the tracks change and fit together.

A game usually takes anywhere from 10 to 15 hours [for the player] to complete; Sometimes it can take 60 to 100 hours. When you start a project, you have to think about that. If gamers are spending 100 hours, and 10 of those are in the shop buying weaponry or upgrading a weapon, you don't want to have a 30-second cue playing there. They'll turn that off very quickly!

So you maybe want to do a 5-minute piece, with 10 variations that are 30 seconds each taken from it. A lot of it is figuring out how much music is needed for how much game time.

Your music manages to squeeze a lot of powerful low end into computer-size speakers.

That's the sound designer in me. I'm always aware of the entire EQ spectrum; it's there to be filled and enjoyed. When you write music, it's important to be thinking about where, physically, the emotion is coming from. Is it the stomach? The head?

You can do a lot of interesting stuff with EQ. My experience with dance music helps me with that, where you often have your hi-hat on the high end, your low bass, and in the middle is the dynamics. That's a good approach, and I use it with my orchestral tracks, too. It can make you feel things that you don't necessarily hear.

Reverbs are very important to your music.

I'm a big fan of effects. I use the Kurzweil KSP8 a lot, which is a standalone unit from the flagship Kurzweil 2500 series made into an effects unit. It has a joystick remote, and it's easy to move things around in the field and to program. I also like a lot of the convolution reverb software, such as Waves IR-1, with simulated rooms and environments.

A lot of pop music today is very dry, but I like its big atmospheric sound. Themes are great, and fun to write, but it's more important to get the atmosphere right. A lot of games and movies have too many themes. You just need a couple; the rest is atmosphere. That doesn't mean it has to be boring. Atmosphere doesn't necessarily mean ambient. It can have depth and be entertaining.

What do you record to?

A Digidesign Pro Tools Digi 002. And I do most of my work in Steinberg Cubase. When Amiga went away, I started with Cubase VST 3, and then VST 5, which I still love. I'm using SX2 now, but I still have a soft spot for 5. And I use a [MOTU] MIDI Timepiece AV.

For me, it's important for MIDI to be perfect. A program may have great new audio features, but it has to be kick-ass MIDI or I'm not interested.

People used to complain because MIDI time wasn't perfect. Well, if you want to make a perfect tight beat, don't do it in MIDI. For me, MIDI adds a little funkiness. I don't think everything has to be that tight, and I rarely quantize anything I record. I just play it and leave it. If I don't like it, I play it again. I don't like to edit for timing unless I'm doing something that has to have a lot of really tight, on-the-beat rhythms. Then I do a lot of programming. But generally, if it's music that needs to sound real, I would rather not program it at all.

What keyboard do you compose on?

It's a weighted keyboard, a Pro Mega 3. It's a piano really, with beautiful sounds, made by the Italian organ company GeneralMIDI.

I was surprised to see so many keyboards here.

My philosophy is the more the better. You like what a certain keyboard does, and you use it just for that. Then you come across another keyboard that does the same kind of thing, but it sounds completely different; suddenly you need both. That's kind of how it started. Like the Yamaha VL1, which is very interesting and does acoustic modeling—mostly brass and flutes. Or my Yamaha CS80, which is like the one used by Vangelis in the '80s. It's like an old organ. It has no real memory, just latches that you can use to duplicate and save four custom sounds. And it weighs 250 pounds! Another old one I like is the Oberheim OBX-A.

I see you have a lot of hardware synths as well as software synths.

I like to do both. I have a lot of computers; five PCs and one Apple G5 (see **Fig. 3**). I keep up-to-date with software. I enjoy Native Instruments Reaktor 5 and Kontakt 2, and, of course, Cubase. There are certain things the software can do that hardware just can't. And software has almost limitless possibilities.

For some people, limitless possibilities are a problem. They like to narrow the playing field.

Not me; I use it all. My computers are basically like synthesizers.

Do you mix in the computer?

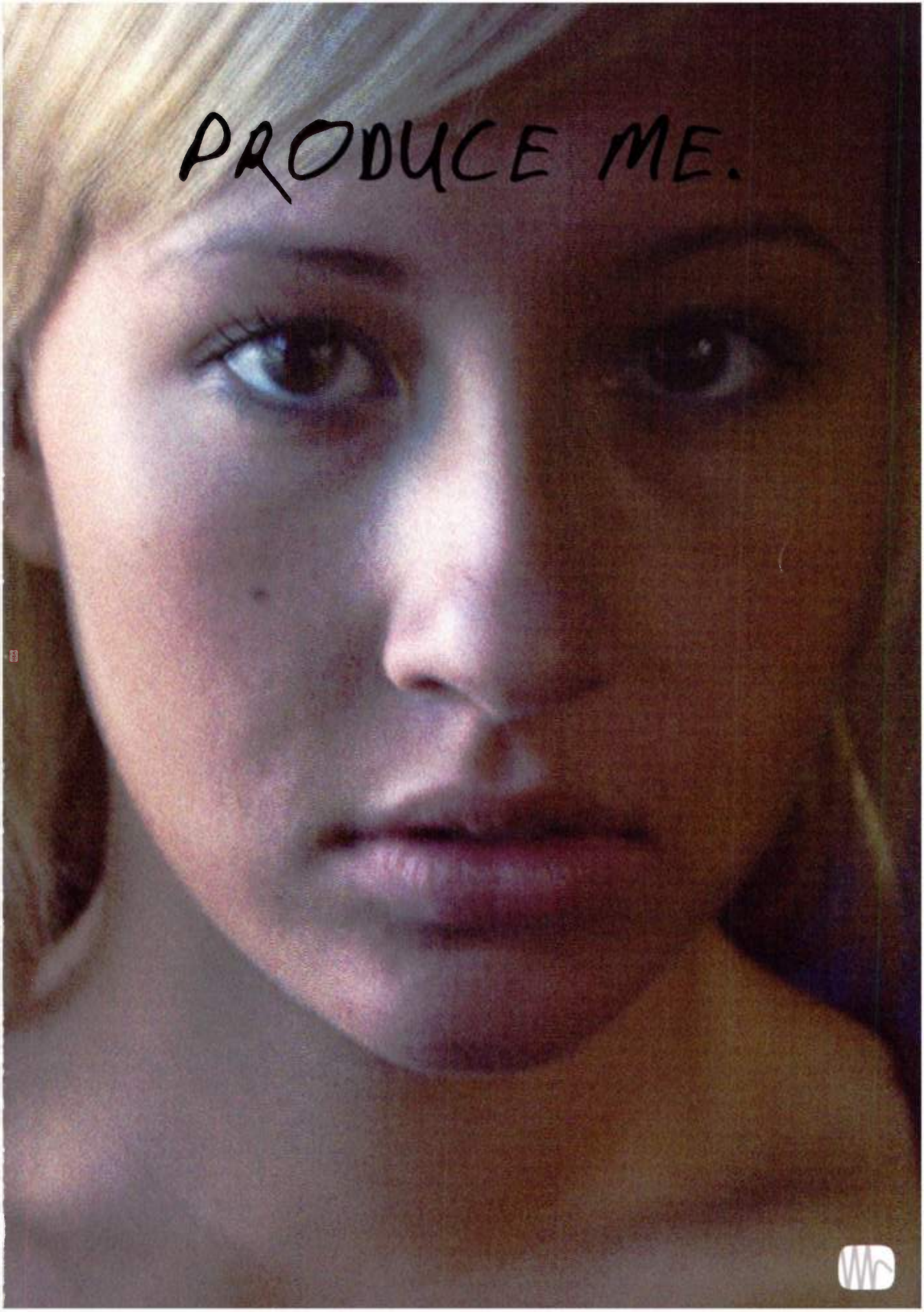
No, I use my Yamaha O2R; everything goes through it. I'm not happy with my mouse for mixing. Some of my friends do everything on their laptop. They sit there staring at the screen and the mouse. But I can't imagine making good music that way. If it's just that little screen and mouse, where does the inspiration come from? This whole setup makes me want to do good music. I find it inspiring to tweak knobs.

Of course, there are lots of things I do with a mouse. But if I'm programming an instrument, after ten minutes, that gets really boring and I may decide to move on. But if you sit with a keyboard, or knobs, you can tweak a lot longer and it's fun. Hardware is the thing for that. It's definitely not going away.

What's coming up next for you?

Well, *Hitman: Blood Money* is coming out soon. And I'm working on my first album, which is very exciting. It's electronic music with beats, but not necessarily for the dance-music crowd only. I'm doing it in New York, with a producer and live musicians, which is different for me. I've also just finished scoring a really cool short film called *Impulse*. It's tough to explain, but it's about a guy planning his own death in very careful, technical detail. **EM**

Maureen Droney's engineering credits include Carlos Santana, Aretha Franklin, Kenny G, and Tower of Power, among many others. Currently, she is the Los Angeles editor for Mix *magazine and general manager of House of Blues Studios.*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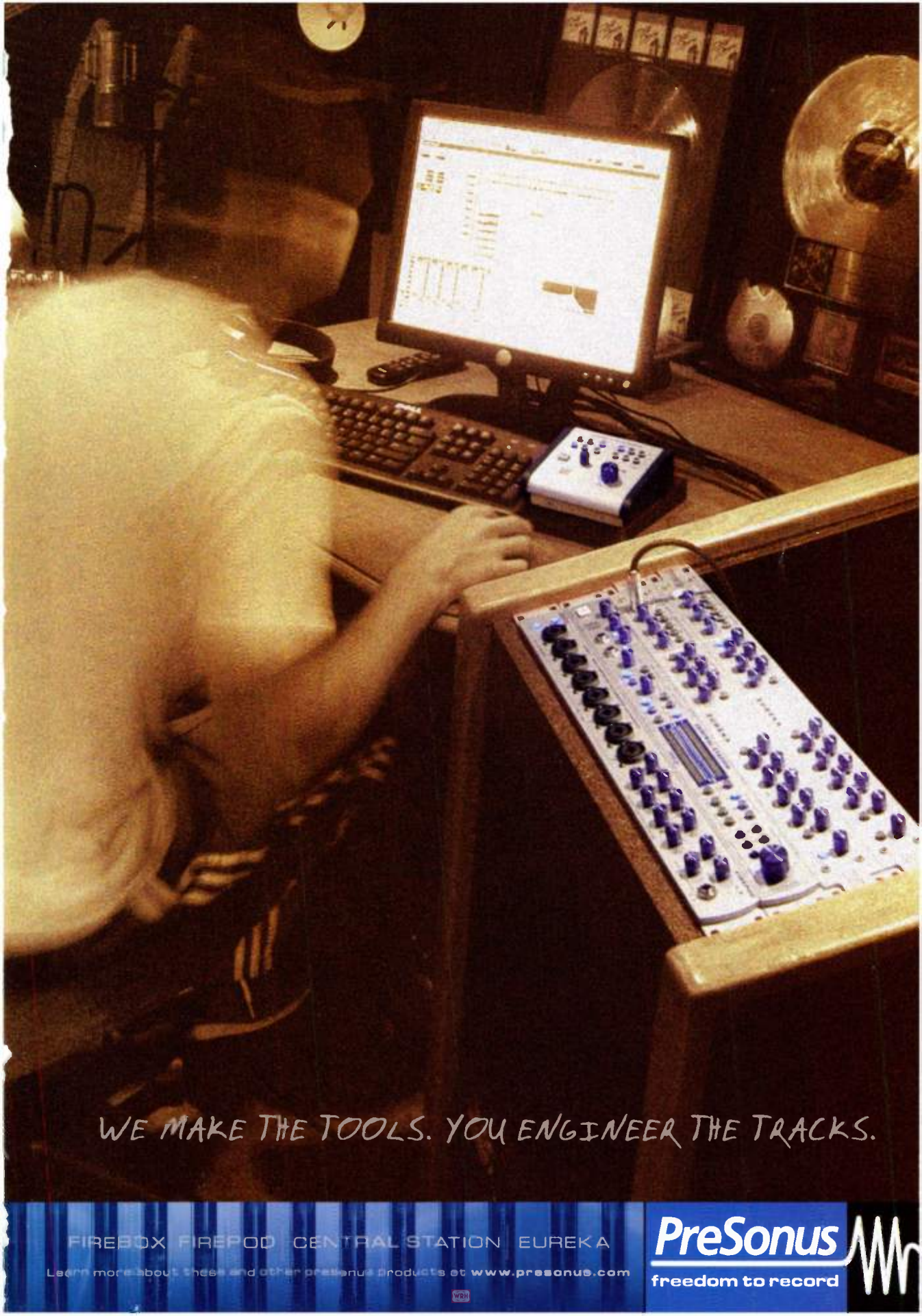
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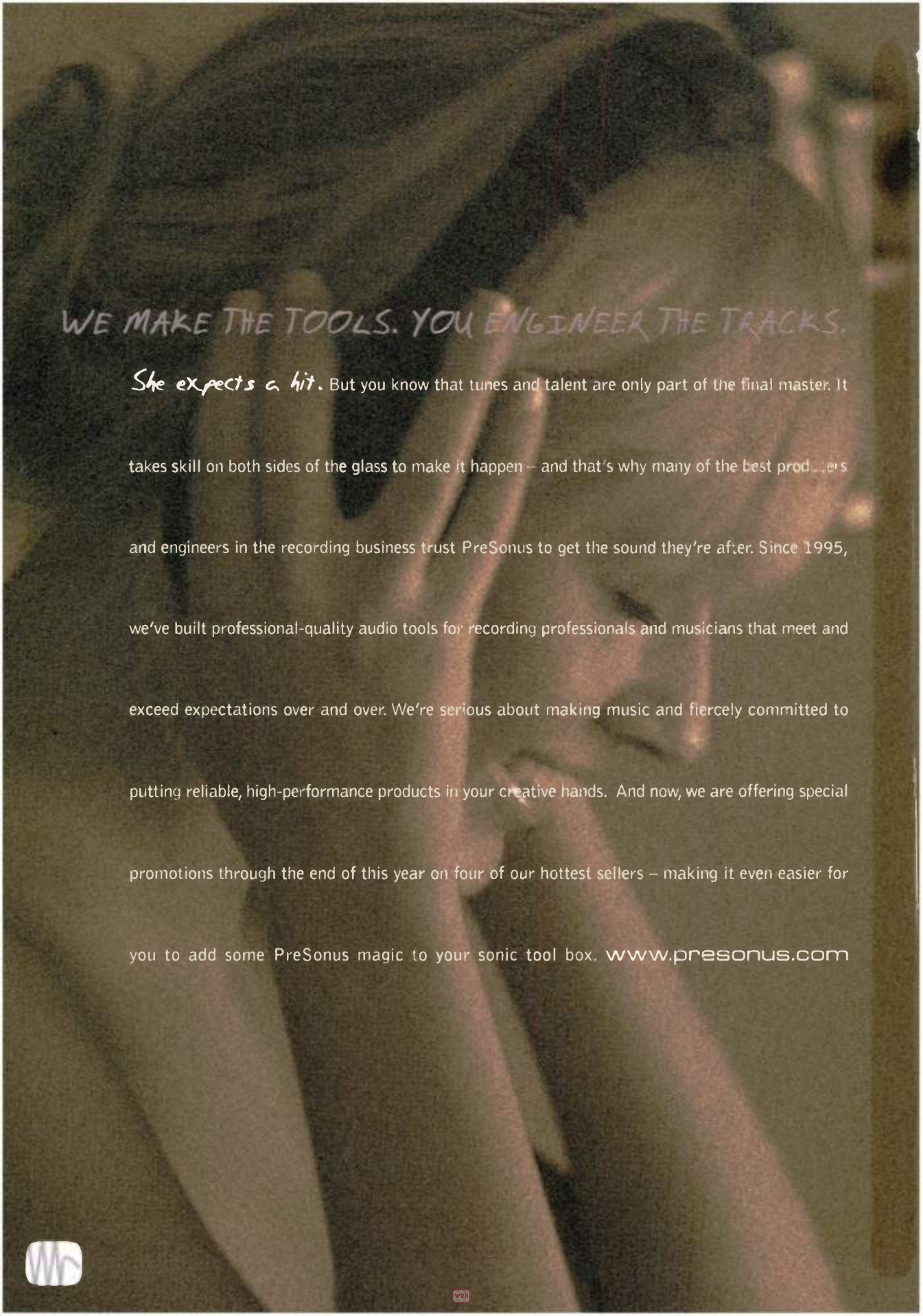
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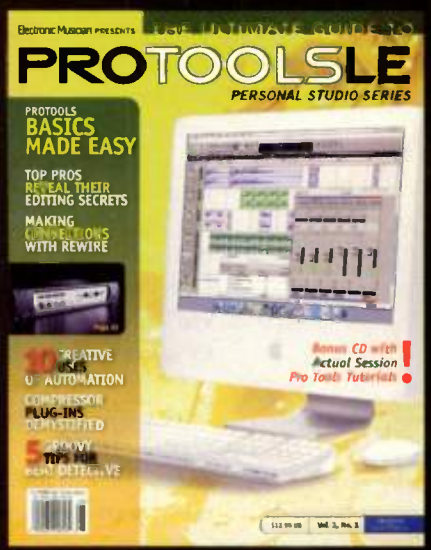

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MIDI for LANlubbers

By Babz

Send MIDI data between Mac and PC over Ethernet

The use of multiple computers has become common in studios today, because the power required for multiple tasks such as multitrack recording, signal processing, and working with virtual instruments (VIs) can quickly exhaust the resources of a single computer. People also use multiple computers to run applications that have been written for a single platform. A typical system might consist of a Mac running an audio sequencer such as MOTU's Digital Performer (DP) and a PC dedicated to virtual-instrument applications such as Tascam's GigaStudio or Steinberg's V-Stack. The PCs in such setups function just like hardware sound modules, and so each computer usually requires a separate hardware MIDI interface and dedicated MIDI cables. You can avoid that duplication of accessories, however, by transmitting MIDI data over a Local Area Network, or LAN.

Apple's OS X now includes a MIDI-to-Ethernet driver in Tiger (OS X 10.4 and higher) for connecting newer Macs. For cross-platform networks, however, you'll need a product such as MusicLab's MIDIoverLAN CP (available at www.musiclab.com).

Net Gains

Setting up MIDI communication over a network differs from traditional hardware MIDI setup, but many concepts will be familiar to anyone experienced with MIDI, and one needs to have only minimal network-setup skills. The following example shows how I configured my system for MIDI transmission over a network. These steps and principles should apply to other systems. My own network has the following system components:

- A Mac G4 running OS X (10.3.9) and MOT Digital Performer 4.52 sequencing software.
- A Pentium 4 PC running Windows XP with Servi Pack 2 and V-Stack 1.2 to host various VSTi softwar instruments.
- MIDIoverLAN CP Platinum Edition v. 2.2.1.
- A broadband router (D-Link DI-604 4-Port 10/1 and Ethernet cables to connect the computers.

FIG. 2: In OS X's Audio MIDI Setup window, the MIDIoverLAN CP Driver appears along with any attached hardware MIDI interface. Click-and-drag to make the connection between the MIDIoverLAN CP driver and your external PC.

MIDIoverLAN CP requires a 500 MHz Pentium PC with 128 MB of RAM running Windows 2000 w Service Pack 4 or Windows XP with Service Pack 1. M users will need a 400 MHz G4 with 128 MB of RA running OS X 10.2.4.

Step 1: Install MIDIoverLAN on your Mac a your PC. Install and register your software. Installatio requires manually dragging-an dropping items on the Mac an launching an installer program the PC. MIDIoverLAN CP inclu drivers for both platforms.

Under Windows XP SP you need to open an Exceptic in the Windows Firewall to all MIDIoverLAN to pass through (th step is unnecessary under SP 1).

Go to the Start→Control Pa and double-click on the Windo Firewall icon. Select the Excepti

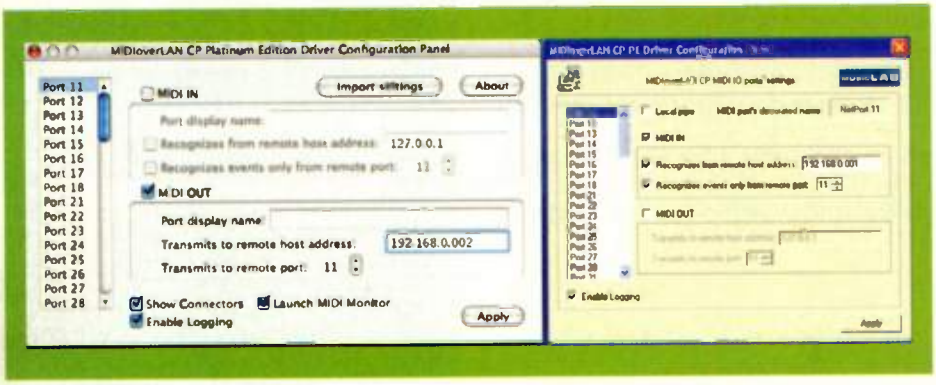

FIG. 1: To transmit MIDI data over an Ethernet connection with MusicLab's MIDIoverLAN, enter your PC's IP address in the MIDI Out section on your Mac, and your Mac's IP address in the MIDI In section on your PC.

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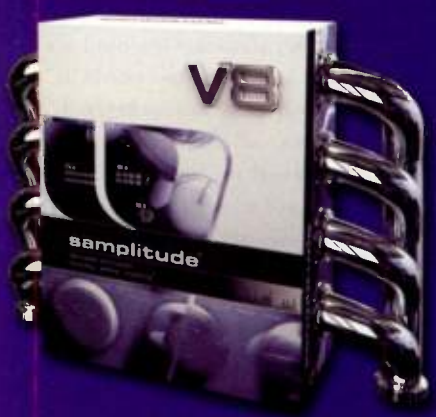

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tab, and click on the Add Port button. Enter MIDIoverLAN in the Name field, and enter 11000 in the Port Number field. Click on the UDP radio button, and click on OK. The Windows Firewall Exceptions tab now displays your newly added MIDIoverLAN entry with a check mark next to it. Click on the OK button.

Step 2: Determine each computer's IP address. Under OS X, go to System Preferences→Network, and you will find your Mac's IP address listed next to "Built-In Ethernet." To find your IP address under Windows XP, go to Start→Control Panel→Network Connections. Right-click on your network adapter's icon and choose Status; then select the Support tab. Write down each of your computers' IP addresses for use in the next step. For this example, we'll assume the addresses 192.168.0.1 for the Mac and 192.168.0.2 for the PC (your IP addresses may be different).

Step 3: Configure NetPorts. MIDIoverLAN uses NetPorts, which are software equivalents of the physical MIDI ports you would have on a hardware MIDI interface. You use them to route MIDI data between your computers. The MIDIoverLAN Standard Edition offers 16 In/Out NetPorts, while the Platinum Edition provides as many as 64 ports (in 8 groups of 8). Just as each device in a hardware MIDI setup requires its own port and MIDI I/O cables, each NetPort requires a unique IP address. Here is the setup for our example using a Mac running DP, and a virtual instrument host PC running V-Stack.

On the Mac, launch MIDIoverLAN and select the first port from the list displayed at left (Port 1 on MIDIoverLAN Standard Edition, Port 11 on the Platinum Edition). Check the MIDI Out box, and enter the IP address for your PC (192.168.0.002 in this example) in the "Transmits to remote host address" field.

The procedure is the same on the PC, except you check the MIDI In box and enter your Mac's IP address (192.168.0.001 in this example) in the "Recognizes from remote host address" field (see **Fig. 1**).

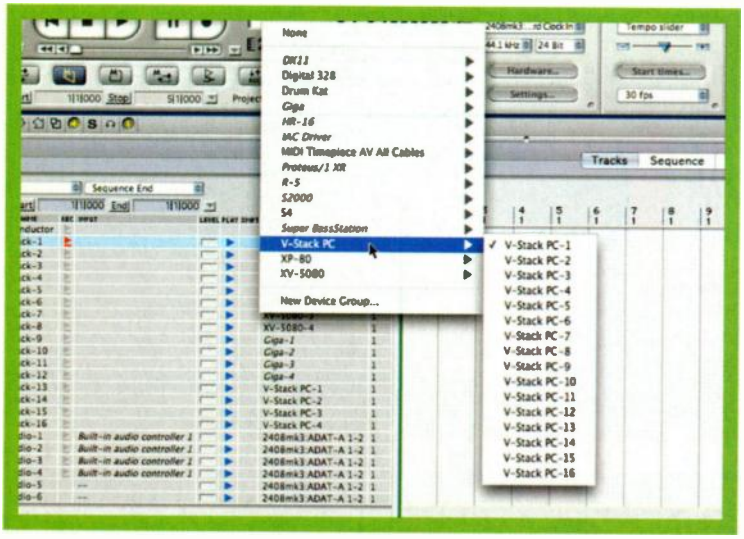

FIG. 3: When the connection is made successfully, you can assign an external PC sound source to a track in DP.

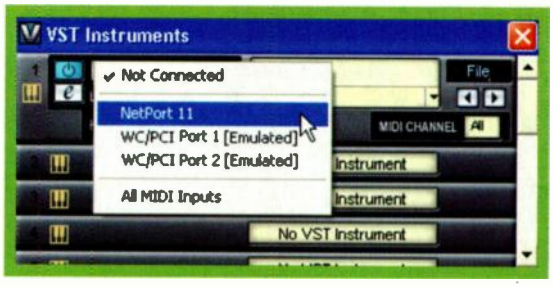

FIG. 4: To make V-Stack respond to incoming MIDI data on the external PC, select the NetPort as your MIDI input source.

Click on Apply, and close MIDIoverLAN on both computers.

Step 4: Make Connections in OS X. The final step is to make a MIDI connection between MIDIoverLAN and your external PC in OS X's Audio MIDI Setup. Launch Audio MIDI Setup. You will notice that the MIDIoverLAN CP Driver appears in the window next to any hardware MIDI interface you may have attached. If you haven't already, create a new MIDI device for your external PC by selecting MIDI Devices→Add New External Device. When the new device appears in the window, double-click on it to set its properties, give the device a name, and choose an icon. Click on and draw a line from the Out port on the MIDIoverLAN icon to the In port on your external PC icon to complete the connection (see **Fig. 2**). Congratulations, you are now ready to test your system.

Launch DP on the Mac and V-Stack on the PC. In DP, record-enable a track and assign V-Stack as its output device (see **Fig. 3**). In V-Stack on the PC, load a VST instrument, pull down the MIDI input pop-up window, and select NetPort 11 (see **Fig. 4**). The choice will be NetPort 1 if you're using MIDIoverLAN Standard Edition. The PC running V-Stack should now receive MIDI over the Ethernet connection from the Mac running DP. To add additional computers to your system, simply repeat those same steps, using another NetPort.

Future Net

MIDIoverLAN won't completely eliminate the need for MIDI hardware, because you'll need at least one MIDI interface to input MIDI information from your keyboard or other controller. But it can be a cost-effective solution if you are setting up a new system with multiple computers. Some users even claim they get better timing by using Ethernet for MIDI data. The network can also serve as a conduit for more than MIDI data alone. An emerging crop of applications such as Plasq Wormhole2 (http://plasq.com) and FX-Max FX Teleport (www.fx-max.com) are designed to transmit audio over a LAN. Who knows? With the ever-blurring distinction between instruments and computers, we may even see more Ethernet ports on tomorrow's keyboard workstations. EM

Babz is a composer/multi-instrumentalist and a freelance music-technology writerp based in New York City.

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Random Bursts

By Peter Schwartz

Noise is a powerful synthesis and sound-design tool.

Although recording engineers view noise as something to avoid, it has great creative potential for the synthesist and sound designer. Wind, thunder, surf, bomb blasts, snare drums, and hand claps are all easily created on any synthesizer that has a noise generator. But in addition to that, noise can be used to enhance pitched sounds in a variety of interesting ways.

Color Me Noise

You're probably familiar with the use of colors to describe different types of noise: white, pink, red, and more rarely, blue. *White noise* is a collection of randomly occurring frequencies equally weighted over the audible frequency spectrum. *Pink noise* is essentially white noise that has been lowpass filtered, so it rumbles along with muted high-frequency content (see **Web Clip 1**).

As you continue to lower the boom on the high-frequency content of noise, the signal eventually becomes inaudible; however, it is still usable as a randomly fluctuating control signal. (On some synths, that is called *slow random* to distinguish it from *audio-range* noise.) Slow random imparts a wobbly, nervous character to whatever parameter it modulates (see **Web Clip 2**).

Noise as a Modulation Source

Minimoogs aren't known for creating grungy sounds, but you can take this classic synth in new sonic directions by modulating the filter cutoff with audio-range noise. The effect of noise modulation on filter cutoff is similar to distortion: grunging up notes when the cutoff frequency is low, and emphasizing the resonant quality of the filter when its cutoff is higher.

FIG. 1: This Arturia Minimoog patch uses noise to modulate the filter cutoff frequency. The amount of modulation is controlled by the Mod Wheel.

I created the example in **Web Clip 3** using the Arturia Minimoog (see **Fig. 1**). As with its hardware predecessor, the OSC3 Mix pot determines the mix of control sources for pitch and filter modulation. This control pans between the Mini's noise source and its third oscillator, traditionally used in its LO range to act as an LFO. In my patch, the OSC3 Mix pot is fully clockwise (noise only), Oscillator Modulation is turned off, and Filter Modulation is turned on. You can vary the modulation amount to get just the right level by using the Mod Wheel.

Adding Noise to the Mix

The effect of modulating a filter's cutoff frequency with audio-range noise differs decidedly from adding noise to the audio signal. **Web Clip 4** demonstrates a Korg OASYS patch in which white noise is mixed with the oscillators as the audio source. That emphasizes the sound of the enveloping of the filters without creating the pseudo-distortion effect heard in Web Clip 3.

I suggest dialing in some noise to enhance sharply enveloped, resonant-filtered bass sounds. The only downside to this technique is that the patch can become noisy. You can often tame the undesirable side effects of added hiss or rumble with some creative equalizing. (None of the Web Clips associated with this article have been equalized.)

FM-eral Uses of Noise

You can use noise as the modulator in FM patches to produce eerie, atmospheric sounds such as submarine sonar pings and vocal choir impressions. Because noise is a complex modulator, it is best used to modulate a sine wave or some other low-harmonic-content waveform. Noise modulation adds an evocative dimension to the sound, giving it a mysterious reverb quality (see **Web Clips 5** and **6**).

My favorite way to use noise is an effect I call ripping vibrato. I use white noise and triangle LFO to modulate pitch, and I route the Mod Wheel to control the amount of modulation. Adding noise gives the vibrato a distinctive chorusing and ripping character (see **Web Clip 7**).

On basic synths, noise modulation is typically limited to frequency and filter cutoff. But if you have access to a modular synth such as Arturia's Moog Modular V or synth construction software like Native Instruments' Reaktor, try using noise to modulate other parameters. For example, using enveloped *red noise* to modulate amplitude produces a typical brass-instrument-style spit tone. EM

EM WEB CLIPS

Peter Schwartz is a composer, arranger, and keyboardist living in upstate New York. His analog synth programming is featured in the factory patches of the new Korg OASYS.

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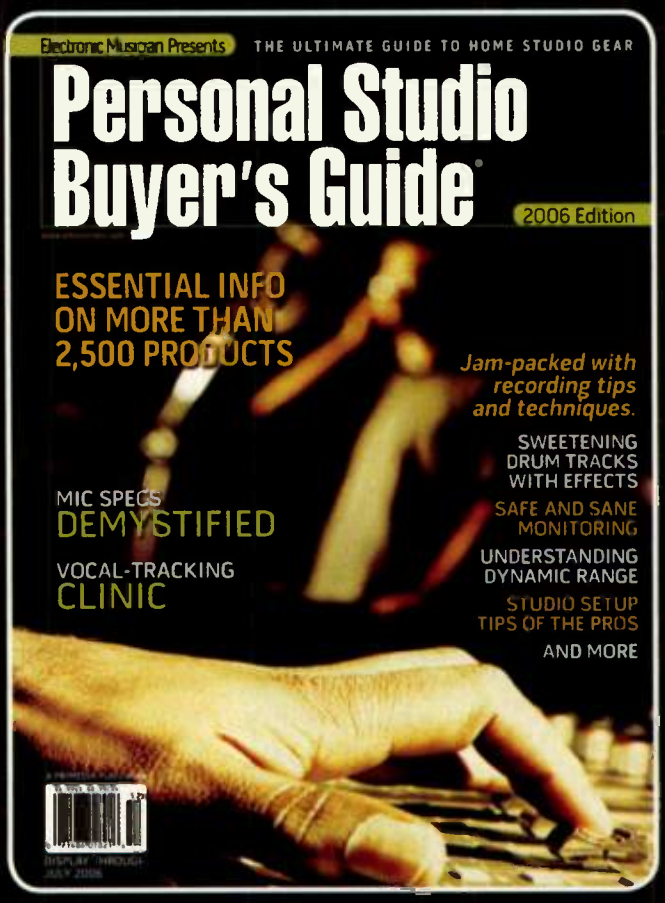

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Taking Control

By Jim Aikin

An introduction to control voltages.

All musical instruments give musicians some types of control, including control over which notes are played as well as what sounds the instrument produces. With electronic instruments, control signals can be sent from one place to another—either within the instrument or from one instrument to another. When a control signal is received, the sound of the instrument will change in some way.

Today, most electronic instruments are digital, so digital control signals, which are often automated, are the norm. MIDI (the Musical Instrument Digital Interface) provides a widely used method for controlling instruments digitally.

Early electronic instruments, however, were analog, not digital. In an analog synthesizer, the audio signals within the instrument and the control signals are in the form of analog voltages. (A voltage is a type of electrical signal.) The control signals used in an analog synth are called *control voltages*, often abbreviated as CV.

A number of companies still make control-voltage-based instruments, but they have become specialty items as other types of synthesis are more versatile and affordable. In addition, manufacturers of some digital instruments use the word *voltage* to refer to digital control signals. (Propellerhead Reason, for example, has rear-panel control jacks that are labeled "CV.") Though the latter usage is incorrect, it's easy for musicians to understand. In this column, I'll explain the concept of CV, which you should find useful, even if you're using only digital synths.

FIG. 1: The Korg MS-20 monophonic synth had a patching matrix, which is reproduced here in Korg's new software version of the same instrument.

Turn the Knob

With modular analog synthesizers, separate modules (oscillators, filters, envelope generators, and so on) perform unique tasks yet work together to create the sound we hear. The oscillators generate raw audio signals, the filters filter out portions of the audio signal, and so forth. Audio signals and control voltages are typically routed from one module to another using patch cords. A cord is plugged into an output jack on the front panel of one module and into the input jack on another module (see **Fig. 1**).

In addition to input and output jacks, most modules have one or more control knobs. For example, the oscillator has knobs for controlling its pitch and waveshape, and the filter has cutoff and resonance knobs for adjusting the filter characteristics. A good way to think of control voltages is that the voltage "turns" the knob for you while your hands are busy doing something else. Although the knob isn't motorized and therefore doesn't physically rotate, the musical result is the same.

For instance, when the voltage level at an oscillator's pitch CV input increases, the oscillator's pitch rises just as if the pitch knob had been turned. When the voltage level drops, the pitch falls. If the module being controlled is a voltage-controlled amplifier (VCA), increasing the level of the CV will cause the amplifier to open further, thus increasing the amplitude of its output. Assuming that an audio signal is passing through the VCA, the output signal will get louder as the voltage increases.

With real analog hardware, a voltage can change smoothly from one value to another. As it increases from 1 to 2V, for instance, it will pass through all of the intervening values—theoretically, an infinite number of them. With digital music systems, signals are always *stepped* rather than continuous. Because of that, if you turn a knob on a digital synth, you may hear a grainy digital artifact called *stair stepping*. One reason that musicians prize real analog synths is that their response to control signals can be absolutely smooth.

Nonstandard Standards

As with MIDI, you can use control-voltage signals to connect equipment from different manufacturers. The

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standards for interfacing weren't as well developed in the 1960s as they are now, but many analog synths use a system known as *one volt per octave*, or 1V/oct. If the CV is applied to an oscillator's pitch-control input in a 1V/oct instrument, increasing the voltage by 1V will raise the frequency of the oscillator by one octave. In other words, the frequency will double. Most new analog synths built today use the 1V/oct standard, but the Buchla 200e system is calibrated to 1.2V/oct so its modules can interface more easily with older Buchla modules, which use that value.

To control the operation of envelope generators, analog synthesizers use voltage signals that are called gates and triggers. A *gate* is a signal that starts when a key is pressed and ends when the key is released. A *trigger* is a short, sharp spike in the voltage. In practice, the leading edge of a gate signal can usually function as a trigger, so we need to talk only about gates. An envelope generator such as an ADSR is controlled by a gate (see Fig. 2).

Two different standards are used for gates. Instruments from ARP and other companies use a gate signal of 5 to 10V to indicate that a key has been pressed; when the key is released, the voltage falls back to 0. That type of signal is called a *voltage trigger*. Moog synths use a competing system called *switch triggers*, or *S-triggers*, which works the other way around: a continuous signal of 5 or 10V drops to 0 with each key press, and rises when the key is released. As a result, using a Moog keyboard with an ARP envelope generator or vice versa requires an extra piece of hardware—a voltage inverter.

Getting Hooked Up

Three types of cables are commonly used for patching voltage-controlled synths. Some have ¼-inch phone plugs, some have ⅛-inch miniplugs, and some have unshielded banana plugs (see Fig. 3). If you have hardware that uses two different connectors, you may be able to link

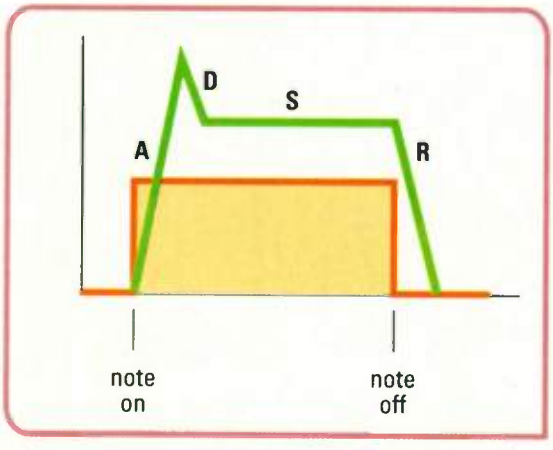
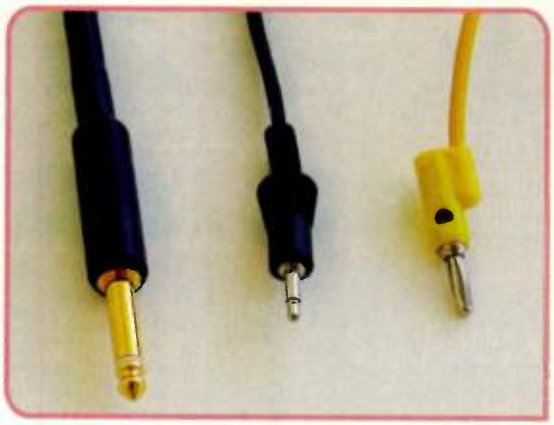


FIG. 2: A gate signal is used to start and stop an ADSR envelope generator.



DMITRY PANICH

FIG. 3: The three types of connectors most often used for control voltage are ¼-inch, ⅛-inch, and banana connectors (L to R).

the modules in a larger system by using adapter jacks, but you'll need to look into grounding and other issues, such as whether you need to convert voltage triggers to S-triggers.

In many voltage-controlled synths, the distinction between control voltages and audio signals is arbitrary: A low-frequency oscillator, for instance, would normally be used as a CV source, but after cranking its frequency up into the audio range (higher than 20 Hz), you could just as easily plug its output voltage into the audio signal path and listen to it. When working this way, it's advisable to keep an eye on whether your synth is introducing a DC offset into the audio signal path. A DC offset is a voltage that rises above or falls below 0V and stays there rather than fluctuating back and forth between positive and negative values. If you send a signal with a DC offset to your speakers, they may not work efficiently, and the dynamic range of your synth will be reduced.

More often, analog synthesists use audio signals for control purposes, rather than using control signals for audio. Modulating the pitch of an oscillator with the output of a resonant filter, for instance, can create an unstable, organic sound that might be perfect for a special effect.

Analog modular synthesizers are large, heavy, and expensive, and they lack such modern refinements as programmable memory. But there's a thrill in creating your own sound by plugging in a bunch of patch cords and twiddling a few knobs. Control voltages threw open the doors of sonic exploration in the 1960s, and when that happened, the world of music changed forever. EM

Jim Aikin is the author of Power Tools for Synthesizer Programming (*Backbeat Books, 2004*) *and* Chords and Harmony (*Backbeat Books, 2004*). *His first synthesizer, purchased in 1980, was a Serge Modular, but these days his favorite instrument is his Jensen 5-string electric cello.*

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Taking Your Studio Pro

By Jeffrey P. Fisher

Planning is key to a successful transition.

There's more to transitioning from personal to project studio than just opening the doors and collecting the cash. Embarking down this road means setting up and operating a small business, which involves research, planning, and answering a few tough questions. I'm going to touch on an assortment of possible issues to get you thinking in the right direction. From there, you will need to do more research and consider each issue carefully.

First, you have to decide what to sell. Are you going to record bands, songwriters, game audio, ringtones, radio commercials, or some combination? Next, examine your resources. What do you already have, and what do you need before you begin? Knowing how to engineer well is obviously important, but so are an adequate room, equipment, and entrepreneurial savvy.

When you apply for a business license, you must decide whether to file as a sole proprietorship, partnership, C or S corporation, or limited liability corporation (LLC). You may need to file a fictitious-name statement, or a "d/b/a" (doing business as), and secure a business tax ID from the federal government. You might also need a special sales tax ID. The Small Business Administration (www.sbaonline.sba.gov) offers free advice on all of those matters.

What to Charge

To determine your daily and hourly fee, consider what the studio's expenses and overhead (including your salary) are, and find out the going rate for similar studios in your area. Inexperienced studio owners/engineers should price themselves at 80 to 85 percent of the market rate, and then raise their rates as their skills grow. Experienced engineers can match the market rate or price their services somewhat higher.

It doesn't matter what you charge if you can't collect. Billing COD is the best policy. Ask for a deposit on larger projects. Some corporate clients may ask for 30 to 60 days before paying the bill. If that doesn't work for you, offer to bill half now and half in 30 days.

Open a business account at your bank so that you can keep your studio and personal finances completely separate. Keep good records of your expenses so that you can deduct the maximum at tax time.

Equipping for Business

You do not need to have everything in place before opening your doors to the public. Start with the basics and grow with the business. Don't forget about necessary gear that's unrelated to music recording, such as a business telephone line, a fax machine, and voice mail. Design and order letterhead and consider purchasing software to help with scheduling, contact management, and bookkeeping.

It's increasingly important to have a clean, business-like Web site that can serve as a primary information source for potential clients. Register a Web domain name for your studio; it's inexpensive and worthwhile. Use that domain name for business email and for the site URL.

Safety Zones

Having a studio in your home comes with its own set of potential troubles. Do you really want strangers traipsing through your living room? Consider separating the studio from the living quarters, especially if there are others in the household. A separate entrance and bathroom are essential. Residential areas usually aren't zoned for business, and your local government probably

TEN TIPS FOR GOING PRO

1. Decide in advance what the focus of your studio business will be.
2. Determine your rates based on your experience and on the market in your area.
3. Establish a billing policy that you can live with.
4. Keep accurate and complete financial records.
5. Make sure you have such necessities as a business line, voice mail, and letterhead.
6. Set up a Web site to promote your studio.
7. Make sure your studio is comfortably furnished. If possible, provide a lounge area where musicians can hang out during downtime.
8. Take security precautions and consider installing an alarm system.
9. Make sure your studio's acoustics have been sufficiently treated before opening your doors for busines
10. Promote your studio consistently and creatively.

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Gary Sredzienski – TAXI Member – www.garysred.com

My name is Gary Sredzienski, and I live in Kittery Point, Maine – about as far away from Hollywood as you can get in the continental United States. And, as you can see in the photo above, I play the accordion.

That's how I earn my living – playing the most misunderstood instrument in the world.

I play it at weddings, retirement homes, Bar Mitzvahs, and in my surf-rock band, 'The Serfs'.

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It was *extremely* unlikely that my music would ever be heard by anybody in Hollywood, let alone, get used in a major motion picture. But that's exactly what happened, and it's all because I joined TAXI.

A friend of mine at a local studio told me about TAXI. Soon after I joined, I saw an opportunity for accordion music.

I sent in my music, but didn't really expect that anything would happen. And for quite a while, nothing did.

Then I got a call from a music editor in Hollywood who got my music from TAXI. He told me he liked what he heard, and asked me to send him everything else I had ever recorded.

Billy Bob Thornton & me!

He called back again, and told me to expect a call from a music supervisor in Hollywood. A few days later, someone from Paramount Pictures called to ask if they could use two of my songs in the remake of 'Bad News Bears' with Billy Bob Thornton.

I tried to be cool about it, but I could barely contain myself. We agreed on a deal, and a few months later, I found myself in a theater watching my name scroll by at the top of the music credits.

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has rules regulating home businesses. Contact your local county clerk's office for more information.

If you have the wherewithal and can get permits, you could construct a separate building for the studio. Alternatively, if a large garage can be spared, you can redesign its interior and build the studio there. The best solution, however, may be to rent a commercial space and build your studio somewhere other than in your home. That could solve many problems at once, although it will give you a bigger financial issue to deal with every month.

Don't neglect aesthetics and client comfort. Make sure you have sturdy furniture for equipment and comfortable chairs in the control room (assuming there is a separate control room). If you work with corporate clients, consider adding a desk, a phone, and a computer for clients to use.

A separate, comfortable lounge area with computer, TV, and even a few video games can speak volumes to some clients. Bands appreciate having a place to go while you and the drummer spend hours perfecting the kick drum.

Install a dependable security system and lock up supplies, microphones, and so on. Hiding what you do from those who don't need to know is another way to minimize problems. Leave the address off of literature, giving only your telephone number and email address, and give directions only to serious clients. (For more on security, see "Working Musician: Don't Get Ripped Off" in the February 2004 issue of EM.)

Acoustics

For the sake of your business, don't neglect your studio's acoustics when planning your transition to project-studio status. In the best-case scenario, the sound in your tracking room should enhance recordings, but at the very least, it shouldn't detract. Your control room shouldn't color a mix to the point that you can't make good mix decisions. If your mixes don't translate to the outside world, you're unlikely to get much repeat business.

Beyond getting the sound right inside your facility, you'll need to soundproof your studio so that inside sounds can't get out and the outside sounds can't get in (especially if you're in an urban or suburban environment with neighbors close by). If you have to stop your session every evening when the freight train passes or when the planes at the nearby airport take off and land, you won't stay in business long.

Put aside part of your gear budget toward acoustic treatments. Get your space analyzed by a qualified acoustician and go with the recommended treatments. It's probably going to be a steep initial investment, but it will pay off over the long term. Although you might think you can't afford to do it, the reality is that you can't afford not to.

Maintenance

As you should do in any studio, learn all you can about keeping your gear in top running order or hire a technician to do it for you. Institute a routine maintenance plan and fix any failures immediately. Clean and "zero out" your gear after every session. Avoid temperature and humidity extremes, and steer clear of disastrous spills by keeping food and drink in the lounge only.

When you're in a session, you don't have time to run to the store for supplies. Stock up on basics such as blank media, batteries, and guitar strings. It's prudent to have backups of important microphones, cables, adapters, and anything else that might help your session survive a breakdown.

If your studio is computer based, file all software updates in case you need to reinstall them. Take notes about all of your special tweaks to keep your computer system fine-tuned. Power conditioners and a UPS are essential investments.

Design a backup procedure for all of your session files, and execute it religiously. The last thing you need is a hard-drive failure to wipe out a critical recording. Use established backup software and reliable backup drives. Consider saving incremental copies of session data so that you can go back to a previous version in case the latest file becomes corrupted.

Work out an archiving strategy in the event your clients want you to maintain copies of their session files and mixes after the project is over. Consider charging for that service.

Promo Pro

Promoting your studio is crucial because without a steady stream of customers, all the work that you put into the studio is pointless. Prepare a flyer or a simple brochure and distribute it to music stores, clubs, colleges and universities, and anywhere else potential clients hang out. Approach corporate marketing departments, ad agencies, video production companies, and local radio, TV, and cable stations and pitch your services to them.

Nurture your word-of-mouth by asking for referrals and rewarding those who send business your way. Become friendly with the workers at local music stores. They can be a good source for referrals. Sponsor a contest, such as a battle of the bands, and give away studio time to the winners. Follow up with all the "losers" to generate more business.

Reality Check

The recording business is a tough way to make a living, but it can be done. If you are serious about taking your studio pro, start by making a realistic business plan. Make sure you have all the bases covered and that when all is said and done, you have a clear path to profitability. Otherwise, you're courting financial disaster. If you plan ahead and put good business practices into place, you will be ready to make your dream come true. EM

Jeffrey Fisher has written six music and sound books, including Profiting from Your Music and Sound Project Studio *(Allworth Press, 2001). Get more help from his Web site at www.jeffreypfisher.com.*

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NATIVE INSTRUMENTS Reaktor 5 (Mac/Win)

More power, more possibilities come your way.

By Dennis Miller

Native Instruments has released version 5 of Reaktor, a major upgrade to an already powerful sound-synthesis toolkit. The new version sports enhancements in many areas, from new Ensembles, flexible interface elements, and streamlined displays to the biggest update of all: an entirely new set of DSP processes called Core modules.

EM has reviewed Reaktor several times in the past, most recently in the December 2003 issue, so in this review I'll focus primarily on its new features. For those readers who haven't yet entered the Reaktor universe, here is a quick overview.

FIG. 1: Reaktor 5 has a wide range of new display elements. Almost every parameter control—knobs, sliders, and pan pots, for example—can have its own skin.

From the Top

Reaktor is a sound-synthesis and sound-processing toolkit that offers dozens of modules for designing software instruments and effects. It has a variety of sound-generating elements such as oscillators, sample players, and noise sources, as well as math and audio-routing functions, graphical user-interface elements, and signal-processing routines. You build structures by wiring modules together, and the type and number of modules that you can have in a design is almost unlimited (though for real-time playback, your CPU is the main determining factor).

But Reaktor isn't just a tweaker's paradise; you can avoid all custom construction and use the numerous Ensembles and the 2,000 user-contributed files that are on the company's Web site. Those resources cover a vast range of approaches and techniques, and it would be tough to find a synthesis method or sound-processing function that wasn't available from the collection of Ensembles you have access to.

Reaktor 5 runs under Windows and Mac as a stand-alone application and as an Audio Units (Mac only), VST, RTAS, and DXi (Windows only) plug-in. As with any

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software instrument, the more RAM and CPU power you have, the better the performance will be. Native Instruments recommends a minimum of a Pentium III/1 GHz or Athlon XP 1.33 GHz processor with 512 MB of RAM running Windows XP, or a G4/1 GHz with 512 MB of RAM running Mac OS 10.2.6. I tested Reaktor on a Windows XP (running Service Pack 1) machine with dual Pentium 4/3.06 GHz processors and 2 GB of RAM with an E-mu 1812m interface, and I had no problems.

Crank It Up

When you first load Reaktor 5, you won't notice any major differences, other than a new color scheme, fewer tools in the main toolbar, and some minor tweaks to the Instrument panel. Registration (challenge/response) is unchanged, and you can still configure many aspects of the program.

Once you load one of the new Ensembles, however, you'll see some of the program's more dramatic changes. A range of new interface elements give Reaktor Ensembles a more modern look. For example, SpaceDrone, a new sound generator, uses custom skins that you can apply to almost any panel element, such as faders and knobs (see **Fig. 1**). As you'd expect, SpaceDrone and other new additions to the Library are not compatible with older versions. Moreover, some Ensembles created in Reaktor 3 won't open in Reaktor 5 unless you have your Reaktor 3 dongle installed.

When you right-click on a Structure window to access the module library, you see a reorganization of the menu offerings and an entirely new set of modules called Core Cell. That category expands into a number of other categories, including Audio Shaper, Control, EQ, and Oscillator, each of which has additional entries of its own. The already crowded modules menu gets even busier with the addition of those new modules. Although you can use the Browser to quickly access Ensembles, Instruments, and Macros, it would be great if the modules appeared there as well.

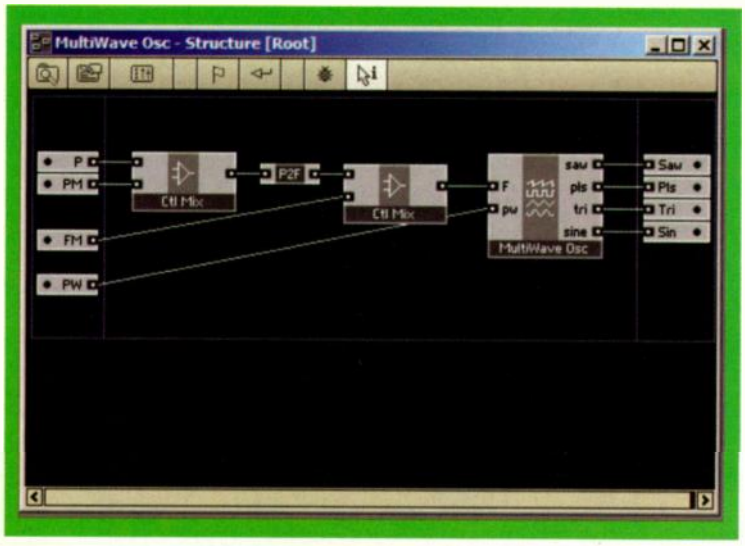

FIG. 2: Core modules are one of the most important new additions to the Reaktor arsenal. You can edit those modules at a very low level, for example, disabling components of their structure that you don't need.

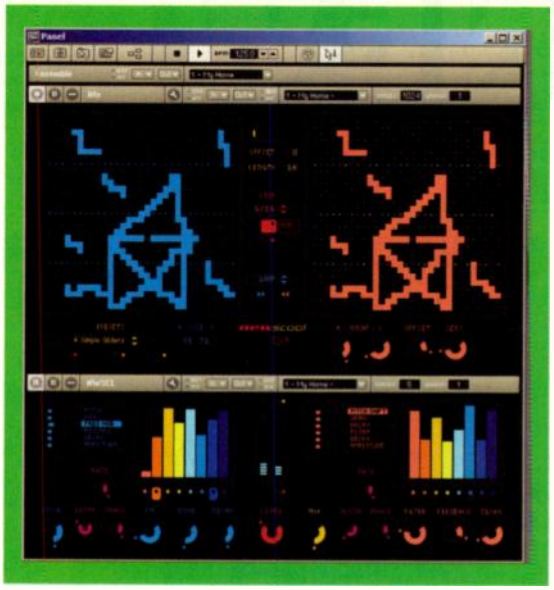

FIG. 3: Newscool is a patch modeled after John Conway's Game of Life, in which cells can "live," "die," or multiply," depending on the conditions that you set up for the patch.

Instrument designers will appreciate a number of new design capabilities and tweaks to existing functions. Among those is the Bookmark feature, which lets you place a marker on any one Structure window and jump to it from any other Structure window in your Ensemble. That is a good start, but even better would be a feature that allowed you to bookmark multiple windows, view a list of them all, and jump to the one you want. (Because you can't name Structure windows, however, some new type of identification scheme would have to be devised for multiple bookmarks to work.) Moving among the main work areas is easier than in the past—new icons in the Structure window give you direct access to the Browser and the Structure's Parent and Properties windows.

Removing wires in a Structure is easier; just click on a wire at its destination and drag it to any blank area of the workspace, and the wire will disappear. When editing Core structures, you'll find a new feature called Compact Board, which helps you keep your designs organized (see **Fig. 2**).

The Panelsets feature expands on the capabilities of Screensets by allowing you to save the position, view, and visibility settings for all Instruments in an Ensemble. You could, for example, have a slimmed-down layout for use in a live-performance setting, and another layout to use while composing in the studio.

If you work with samples, you'll appreciate the ability to preview sounds off your drive from the

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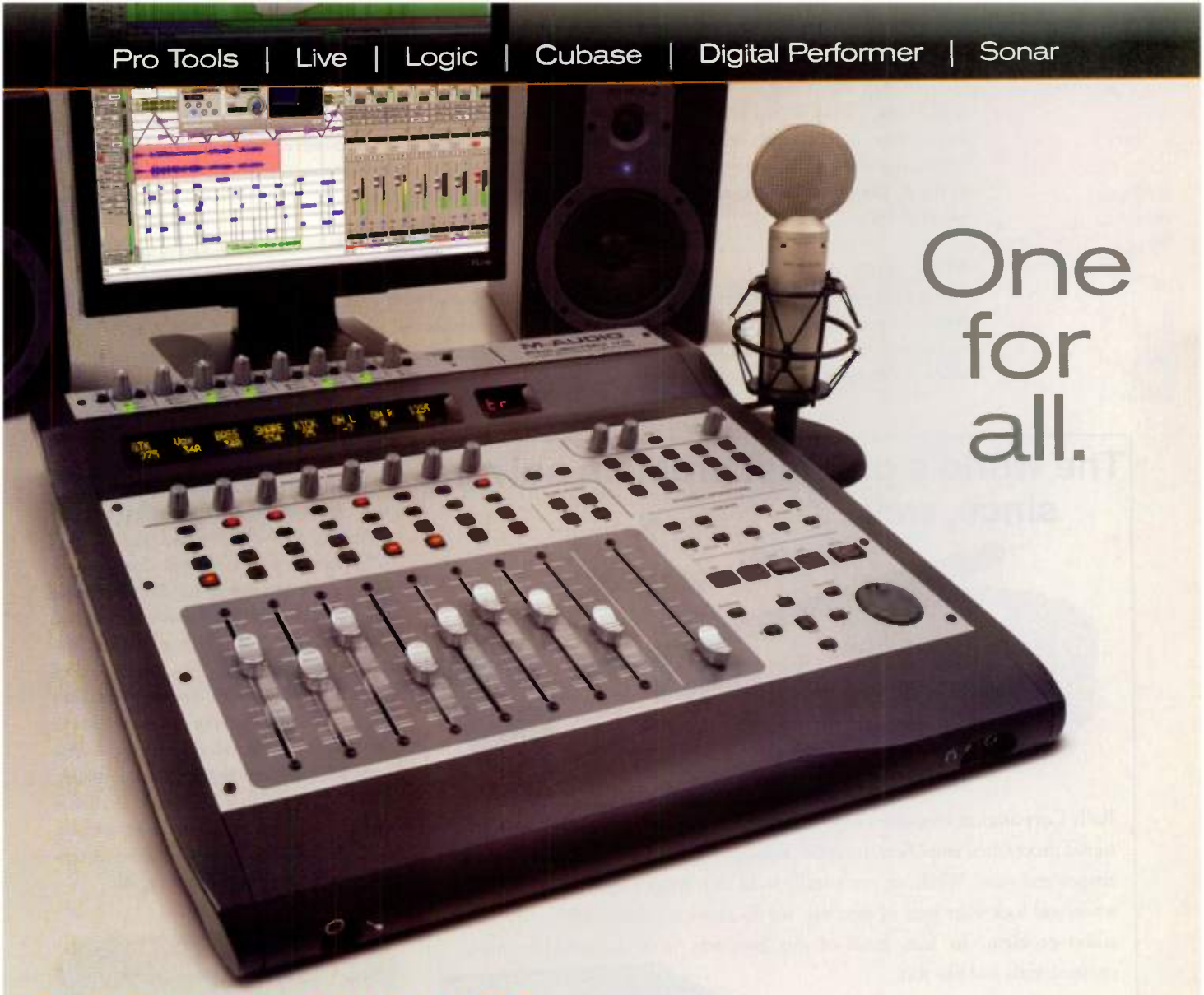

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Sample Map Editor and the Browser, though not from a File Open window. (In Windows, you can use the right mouse button to play the file using your default sound application.) If you enable the Browser's Auto feature, sounds play automatically when you first select them.

More Core

Perhaps the most important enhancement in Reaktor 5 is Native Instruments' new Core technology. Core supplies signal-processing capabilities that were previously unavailable and that allow users to create modules at a lower level than before. Core modules operate at the level on which actual samples are written into a buffer for playback or processing; you could therefore create, say, your own custom oscillators or filters (assuming your DSP chops were up to the task). Native Instruments provides an entire printed manual devoted to working with Core elements.

In addition to the new Core modules included with Reaktor 5, a number of existing Ensembles have been updated with Core components. Core modules are fully portable and easy to add to your toolkit. Without much effort, you can upgrade your favorite Ensembles by substituting Core modules for existing ones. A simple example would be to substitute a Core Multiwave LFO for the simple LFO used in many earlier Ensembles, which would give you a greater choice of LFO shapes. I also expect to see a large number of user-created Core modules online soon.

Ensembles created with Core components don't necessarily run faster or more efficiently. In fact, I did a simple comparison of the original SteamPipe with the Core-enhanced version, and the original used about 5 percent less CPU power. But that's not the whole story—you can make edits to Core modules to increase their speed, which is something that was not possible previously. For example, the new Multiwave Oscillator module outputs four waves simultaneously. With just a few clicks, you can limit its output to three, two, or even one signal.

PRODUCT SUMMARY

NATIVE INSTRUMENTS Reaktor 5

software synthesizer
$579

OVERALL RATING (1 THROUGH 5): 4

PROS: Huge range of sound-design and sound-processing modules. Improved display and user-interface elements. Excellent collection of included Ensemble examples. Core modules bring new capabilities for low-level programming.

CONS: Some features not well documented. Bookmark feature could be more robust.

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Out of the Box

Native Instruments has always been generous with the number of example files it includes, and that hasn't changed with version 5. Almost 100 Ensembles ship with the software, each of which has dozens of Snapshots (typically 30 to 40, but often as many as 90). The collection is a fascinating assortment of unique sound-design tools, algorithmic-compositional processes, live-performance instruments, unusual visual elements, and great-sounding patches for almost any style or musical taste. Native Instruments provides a printed Instrument Guide containing usage tips and an explanation of many of the included Ensembles.

SteamPipe 2, for example, is an update of the original SteamPipe that appeared in Reaktor 4. It's one of the most unusual physical-modeling Ensembles in the entire collection, and I've always loved its sound. I dug into the Ensemble's Structure and found that a Noise source creates the steam effect that is fed into the pipe model. I replaced the Noise source with a sampler so that any file on my system could become the exciter in the network (see **Web Clip 1**). There are more than 80 Snapshots, ranging from acoustic-instrument emulations (Flute, Bell, and Harp, for example) to ambient, evolving timbres (SteamGhost and Bowed Bell are two of my favorites), and each creates a unique effect on samples or on the default Noise source.

Oki Computer 2 is another Ensemble that has been updated with Core modules. It uses wavetable synthesis as the basic sound engine and provides a collection of 50 waves (16 can be loaded at once) for the oscillator to scan through. You can alter waves individually using a number of different parameters, and several of the presets morph through all the waves that are loaded. There are two assignable envelopes, an LFO, a filter section, and a clever scheme for loading and selecting waves. I altered the patch so that the LFO scanned through the wave tables, lowered the LFO speed, and set the second envelope to control pitch. You can hear the results on the EM Web site (see **Web Clip 2**).

Loop Meister

If you work with loops, Reaktor will be your little bit of heaven. A number of the new Ensembles are geared directly toward looped-based music production.

The default preset in Newscool, for example, has a sound and rhythmic quality vaguely reminiscent of Paul Lansky's Idle Chatter series. The Ensemble uses a cellular-automata procedure to determine what events the sequencer will generate (you can draw your own patterns on a graphic display or use the supplied presets), and a second display mirrors the activity coming from the sound engine (see **Fig. 3**). For example, there's no way to save the output of the graphics to an uncompressed AVI or Quick Time movie file, so for the most part, you are left with some very tasty eye candy.

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Speaking of graphics, the sound generator Skrewell has an amazing display that shows a real-time Lissajous pattern. (In the analog world, you can produce Lissajous patterns by using a sound to vibrate a mirror, then bouncing a laser or some other light source off the mirror. If you use two or more interacting sound sources, a vast range of animated patterns can be produced.) The sound source that drives the display is a bank of eight oscillators, and you can either control them with great detail or let the Ensemble run in random mode. There are also a number of adjustable parameters to control the display itself, including its size and the types of graphics it uses (lines, crosses, rectangles, and particles, among others).

Though the examples that ship with the software would keep you busy for many days, it is impossible to overlook the many outstanding files that are available from the Native Instruments online User Library. EM contributor rachMiel's cloudMaker, for example, is a versatile and well-documented Ensemble that, according to its creator, was inspired by Curtis Roads's writings on granular synthesis. At the core of the Ensemble is a Grain Cloud sample player and an effects component that combines two filters and a delay. The Ensemble automatically generates a continuously changing sound by constantly moving through different portions of your sample(s) and changing the values of the numerous parameters. Using the effect on many of my samples made them sound unusual and compelling (see **Web Clips 3** and **4**).

In Transition

Native Instruments deserves kudos for aggressively upgrading and improving its software. There are many other tweaks and usage enhancements in version 5, and although I can't mention them all because of space constraints, Reaktor users will appreciate the subtle modifications and fixes in this version. There's no other software-based modular synthesis toolkit that's as powerful as Reaktor; Applied-Acoustics Tassman physical-modeling software comes to mind, but Reaktor is clearly the more general purpose of the two (though there's no reason why they both wouldn't fit nicely on the same desktop, especially in a professional musician's toolkit).

Reaktor, a hugely popular music-production platform, is useful for any type of composition or sound design, and is well-suited for live performance, installations, and other settings. With the new Core technology, it is an even more powerful application for designing custom signal processing and performance tools. If you haven't yet looked into Reaktor, try out the free demo version.

EM WEB CLIPS

Associate Editor Dennis Miller has been known to overReakt to excellent software.

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FIG. 1: Because it supports interchangeable capsules, you can expand the sonic palette of the Red Microphones Type B with Blue Microphones Bottle Caps or vintage capsules from Neumann.

RED MICROPHONES Type B

A bottle microphone priced for the personal studio.

By Rich Wells

ed Microphones (a division of Blue Microphones) was originally created to serve as a source for vintage mic parts. The first branded mic from Red Microphones is the Type B, which combines a transformerless, Class A, discrete solid-state preamp with a large-diaphragm, lollipop-style cardioid capsule. The capsule on the Type B is removable, allowing you expand your tonal palette with more specialized capsules.

The standard Type B capsule has a 6-micron, gold-sputtered Mylar membrane that is designed to be a versatile, multipurpose pressure-gradient condenser. The Type B package also includes a Blue Cranberry mic cable and a shockmount.

Lock and Load

Though the Type B is a full-fledged condenser microphone in its own right, its raison d'être is its ability to use interchangeable capsules. The Type B supports spring-loaded, bayonet-style capsules (as opposed to the threaded capsule found on mics such as the original AKG C 451). To attach the capsule, simply line up the cylindrical housing at the capsule bottom with the key on the mic-body mount, push down, and twist to lock it in place. The manufacturer says that capsules can be exchanged even while the mic's power supply is on.

The Type B design is compatible with capsules such as the Neumann M7, M8, M9, and 55k, which fit older Neumann and Gefell mics, including the CMV 563 and the line of mics Neumann made for the state agency RFT before German reunification. More importantly, because they're easier to get, the Type B supports Blue's series of Bottle Caps. As the name implies, those capsules were initially designed for the company's Bottle microphone. Among the Bottle Caps are medium- and small-diaphragm cardioids, a large-diaphragm figure-8, large- and small-diaphragm omnis, and three large-diaphragm cardioids with different characteristics than the standard Type B capsule.

Red Microphones, through its Web site called Vintage Microphone (www.vintagemicrophone.com), lets you rent the Type B mic. If you decide to purchase it, the rental amount is deducted from the sale price.

A Little Rise

I first tried the Type B on a male vocalist. Because I received two mics for review, I was able to test them through two different preamps simultaneously: one was a transformer-based, solid-state model designed

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to exhibit some coloration at certain settings; the other was a clean, quiet tube preamp. I placed the mics in front of the vocalist with the capsules about an inch apart, pointing slightly downward, and somewhat toward his chest. The singer sang toward the opening between the two capsules.

The Type B responded well through both preamps. The sound was clear but without too much of the upper-mid presence peak that is often found in cardioid condensers. It's there, of course, as the frequency response graph showed—a somewhat surprising rise of about 8 dB centered at 6 kHz, spanning from 3 to 10 kHz.

In the studio, the 8 dB rise sounded more gentle than I would have expected. That could be attributed to the low-frequency peak centered around 50 Hz, and the 4-foot by 8-foot sheets of rigid insulation that were fanned out behind the singer to dampen high-end reflections. Nonetheless, I was pleased that the Type B yielded a pleasant sound from the singer's voice through both types of preamps.

Red Mic, Blue Mic

I was also curious to test the Type B on vocals and acoustic guitar in combination with a Bluebird, Blue's similarly priced multipurpose cardioid condenser mic. For that test, I ran the mics through two channels of the same preamp, each at the same settings. Even though the mics have similar specs, the Bluebird sounded brighter, with slightly less low-end response. It also seemed to have a slightly hotter output than the Type B.

There were a lot of mids present when I tried the Type B on acoustic guitar. Again, the mic's sound isn't overly peaky, and it doesn't overrepresent the top strings. If you are looking for something sparkly to put on top of a mix, you'll want a brighter microphone. The tone of the guitar itself, however, sounded nice through the Type B.

Used as a distant mic for an upright bass placed approximately six feet away, the Type B nicely captured a full sound while capably representing the airy upper

PRODUCT SUMMARY

RED MICROPHONES Type B

condenser microphone
$449

OVERALL RATING (1 THROUGH 5): 4.5

PROS: Great sound on a number of different sources. Lacks spiky upper-mids common to many modern cardioid condensers in its price range. Ability to change capsules.

CONS: Physically a bit long and bulky for some applications.

MANUFACTURER
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TYPE B SPECIFICATIONS	
Capsule	1", pressure-gradient, gold-sputtered
Polar Pattern	cardioid
Frequency Response	20 Hz–20 kHz
Output Impedance	50 Ω
Noise Level (A-weighted)	<7.5 dB
Maximum SPL	138 dB (0.5% THD into 2.5 kΩ)
Sensitivity	200 mV/pa (1 kHz into 2.5 kΩ)
Dynamic Range	130 dB (2.5 kΩ load)
Power Requirement	+48V phantom power
Size	7.87" (L) × 1.77" (D)
Weight	1.04 lbs.

registers and ambience. I also used the Type B as an overhead mic for drums and on the kick drum. The mic didn't display any problems handling the sound pressure when placed one foot in front of the bass drum, which was the maximum distance I could afford at the time. As an overhead mic, at a height of 7.5 feet and directly above of the drums, the Type B sounded great, even when compared with the single small-diaphragm condenser I often default to for that job.

Because of its long neck, the Type B can be difficult to place in a tight spot. Other than that, I wouldn't hesitate to use the Type B in most situations.

Lollipop, Lollipop

If you stick with the basic cardioid capsule that comes with the Type B body, you will have a great-sounding, versatile mic at a great price. In fact, it is a bargain when you consider that many of Blue's Bottle Caps cost more than the entire Type B system itself, making it tempting to purchase a second mic rather than a more specialized capsule. Either way, you can't go wrong: the Type B is a very good buy.

Rich Wells oversees the Supreme Reality, a recording studio/band/waste-management concern in Portland, Oregon.

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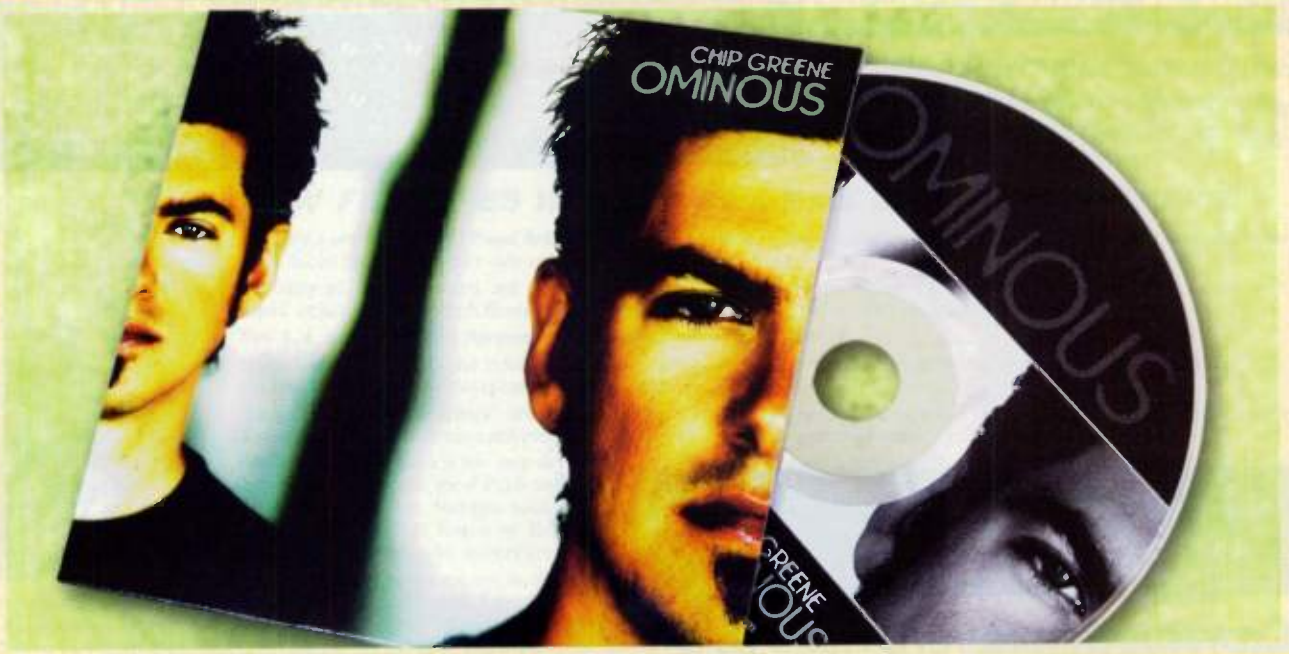

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FIG. 2: The Info window shows a photo of the space in which the impulse response was recorded. Note the illustration of the stage positioning at the bottom of the screen.

The Stage Positions feature resulted from research conducted by Audio Ease on the effect that stage position has on a room's impulse response. That feature allows you to place a virtual source (represented as one or two loudspeakers for mono and stereo sources, respectively) on the soundstage. You can move mono sources left to right and stereo sources closer or farther apart. Front-to-back placement is possible for mono or stereo sources (see **Web Clips 1, 2, 3,** and **4**).

The EQ page has two fully parametric bands and bass and treble shelving EQ, with ±24 dB of gain on each band. A noneditable graphic display shows the resulting curve.

The CPU page has a meter showing how hard Altiverb is hitting the CPU, and it has several settings designed to allow the CPU load to be lightened in some situations. For instance, there is a decay knob that sets the level to which the reverb must decay before it is cut off. That control won't be much help for delicate or exposed material, but in dense mixes the cutoff level can be raised considerably without adversely affecting your audio.

More New Features

Altiverb now accepts multichannel inputs up to 5.1. The reverberator, however, is still only mono or stereo input, so the multichannel input is mixed down and then fed to the reverberator. Although it is always possible to instantiate two stereo Altiverbs for quad input, that still doesn't sound quite the same as a true multichannel input reverb. (The sonic difference could be noticeable for orchestral and post-production applications, but not for most forms of popular music.) Of course, the computational demands with more than two input channels would be huge. The Input/Output gain section changes its configuration with the output configuration, adding pots for multichannel output.

A new snapshot area allows you to capture as many as ten snapshots and recall them manually or through automation. The snapshots are easy to use and are especially useful for post-production applications. Transitions from one snapshot to the next are seamless if they use the same impulse response; if not, the output mutes briefly while changing. Though presets are stored in an Altiverb data folder, snapshots are stored with your DAW session.

You can now use the large decay knob to lengthen and shorten decay time, and the knob has gained a Reverse-Reverb button and a Size pot. The Size pot shifts room modes and affects decay time.

Altiverb comes with several built-in test sources. You can also add your own. The default setting triggers a test sound whenever you finish tweaking a parameter, letting you hear the reverb without having to start playback. That is a useful feature.

A new Presets menu contains applications-oriented presets. You can still go directly to the Impulse Response menu and select one from the large collection of impulse responses.

Hearing Is Believing

I evaluated Altiverb 5 using the same G4/800 MHz Mac that I used for the Altiverb 1.4 review. This time, however, I ran OS 10.3.8 and DP 4.5.2. Though considered a muscle machine when I first reviewed Altiverb, by current standards, this Mac is only a couple of notches above the minimum platform required for Altiverb 5.

Audio Ease significantly reduced Altiverb's CPU demands in version 4, and the difference is noticeable. Instantiating a single stereo-in, stereo-out reverb still made DP's Audio Performance meter jump from about 10 or 15 percent to just under 50 percent, but that's a lot better than when I ran it under version 1.4 on the same machine.

When I added a surround master and inserted a 5.1 Altiverb on it, the Audio Performance monitor started flashing red and green. But the overload light never went on, and Altiverb's CPU meter showed just under 50 percent. You'll need a Power Mac G5 to do real surround work with Altiverb.

Altiverb's sound is still great: very dense, smooth, and spectrally balanced. The EMT 140 emulation is the best plate sound I have heard from any digital reverb. The EQ and damping are useful and provide powerful shaping options. Add the color changes wrought by the Size pot, and it is clear that Altiverb offers tremendous tonal control. You can adjust almost all parameters with little or no interruption in the sound.

PRODUCT SUMMARY

AUDIO EASE Altiverb 5

convolution reverb software
$595 (MAS/RTAS/VST/Audio Units)
$895 (adds HTDM)
upgrade from version 4, $169

OVERALL RATING (1 THROUGH 5): **4.5**

PROS: Superb sound. Useful selection of parameters. Extensive impulse-response collection. Many powerful new features.

CONS: CPU hit, though improved, is still not to be taken lightly.

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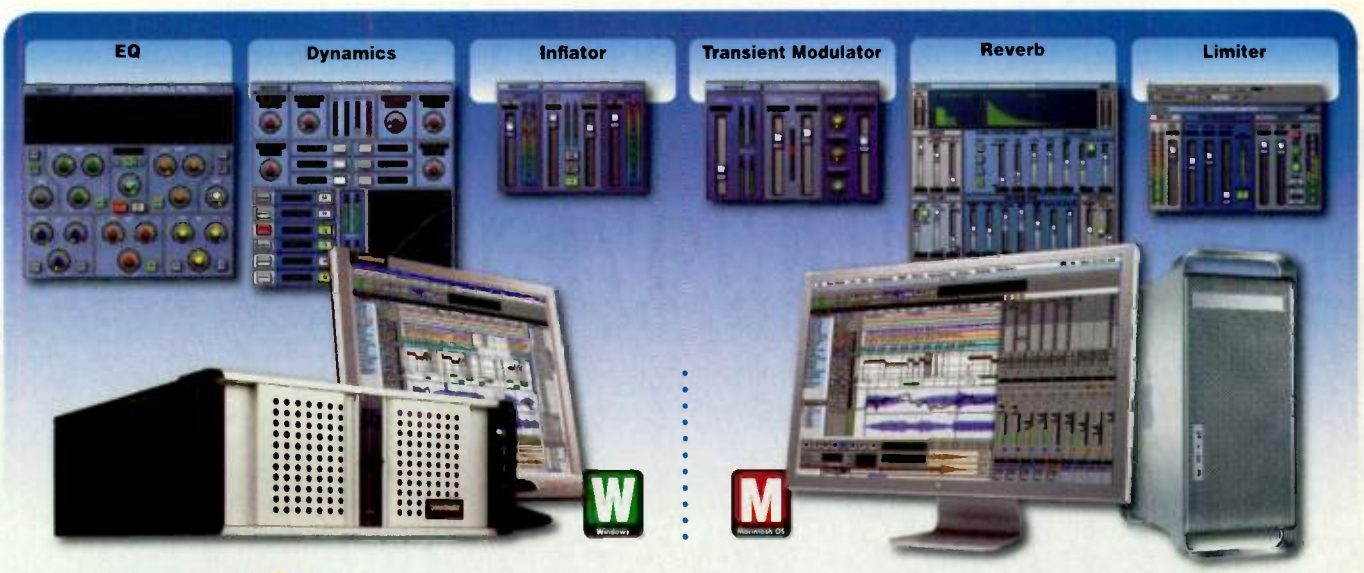

Oxford Plugins

Sony absolutely redefined the world of professional music production with the Oxford OXFR3 digital console. Known for its surgical precision, pristine sound and musical character, the OXFR3 quickly became the console of choice for many of the biggest names in the business.

The Sony Oxford Series of Pro Tools plug-ins delivers the essence of that million-dollar console to your desktop. No mere emulations, the EQ and Dynamics plug-ins use the same DSP code developed for the original OXFR3, while the rest of the Oxford line was developed by the Oxford team to provide astounding control over every aspect of your audio productions.

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On an Impulse

The collection of impulse responses that comes with Altiverb is huge and includes many European churches, auditoriums, and recording studios, as well as a few from New York (see **Web Clip 5**). There's also a healthy selection of sampled hardware, such as the plate mentioned earlier, the AKG BX20E spring, the Lexicon 480, the EMT 250 digital, and many more. Each of them has a handful of impulse responses, adding up to a very rich assortment. With a convolution reverb, the key to sound quality is well-engineered impulse responses; Audio Ease constantly adds good impulse responses to its site, so you'll always have a large collection of reverb colors to work with.

Altiverb enables you to make and use your own impulse responses, as it has since the program original release. The Altiverb disk includes the Sweep Generator and Altiverb IR Preprocessor, with appropriate instructions, to facilitate the process of creating impulse responses in Altiverb's proprietary file format.

I have only a few minor quibbles: the lack of multichannel inputs is one, but given how difficult convolution is computationally, it might not be practical to expect that feature. Also, none of the parameters are displayed numerically until you click on a knob. Although that arrangement is workable , I prefer being able to take in all of the settings at a glance.

Audio Ease had a winner with the sound of the original release of Altiverb. Now the company has brought the product's features up to the same high level. Audio Ease did an excellent job of choosing parameters that will get used all the time, rather than going for the glitz appeal of things that you would use only occasionally.

Altiverb gives you flexibility and variety, is straightforward to use, and has good presets, all at a reasonable price. The sound of the EQ and damping is superb, and the user interface is designed well. The addition of test sounds and application presets adds useful functionality that will come in handy. The recording information and photos help give a feel for the space.

In short, Altiverb 5 is unquestionably at the top of the digital-reverb heap—a first choice for everything from post-production to jazz or classical, and from rock 'n' roll to hip-hop.

EM WEB CLIPS

Larry the O's San Francisco–based company, Toys in the Attic, provides a variety of musical and technical services. He is also a contributing editor to EM. As if that weren't enough, he has a day job, too.

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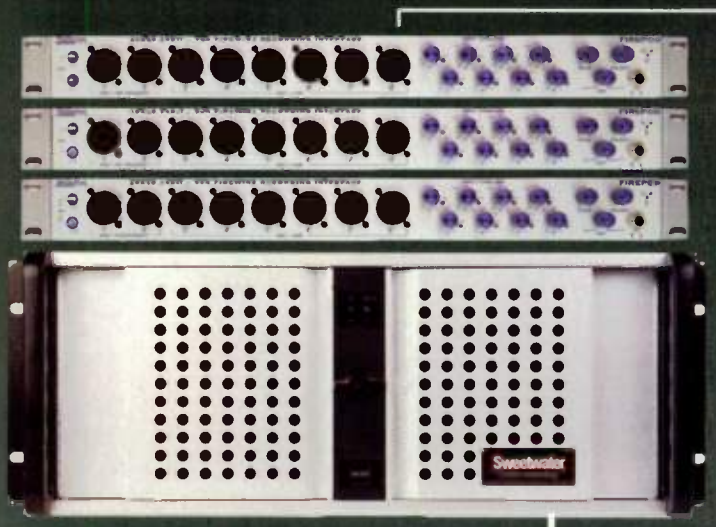

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SKB Roto Shock Rack When you're recording on the road, you can rely on SKB. The Roto Shock Racks feature a "road ready" roto molded tough shell with an integrally molded valance that eliminates the need for a metal valance on the outside of the case. Standard rack depth front to rear rail is 20" with a standard 19" rack width per EIA standards. The efficiently redesigned frame with threaded steel rails and aluminum cross components are factory equipped with 8 HM-245 elastomeric, high damping, wide temperature range shock mounts. Additional shock absorbers can be easily field mounted in each corner to handle heavier loads. Removable front and rear doors are fitted with rubber gaskets for water resistant protection. Easy-grip molded handles make transport convenient and recessed heavy-duty spring loaded twist latches allow these cases to meet ATA flight specifications.

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The KSM32 cardioid condenser microphone has an extended low frequency response and is designed to provide an open and natural reproduction of the original sound source. Flexible enough to handle a variety of demanding sound sources, the KSM32 has a 15dB attenuation switch for handling extremely high sound pressure levels associated with drums, percussion, ensembles and wind instruments making it equally useful at home in the studio or on stage. To achieve extended low frequency reproduction, the KSM32 features an embossed, ultra-thin, high-compliance diaphragm. This gold-layered, low-mass Mylar® diaphragm provides the excellent transient response necessary to faithfully reproduce any sound source.

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FIG. 1: KRK's updated V8 powered monitor features an 8-inch Kevlar woofer, a 1-inch domed tweeter, and a 180W amplifier.

KRK SYSTEMS V8 and Rokit RP10S

A 2.1 powered-monitor system for discerning ears and eyes.

By Eli Crews

With so many high-quality and affordable studio monitors available, choosing a pair can be difficult. Although personal preference can be a guide, the monitor must provide an accuracy that lets you see into your mixes and decide what will help them sound faithful when played back in different environments. Along with KRK Systems' new Rokit RP10S powered subwoofer, the company's new V8 powered near-field monitors make up a 2.1 system that offers accuracy and value.

Yellow Bellied

The updated V8 (see Fig. 1) is one member of KRK's V Series 2 line of 2-way active powered monitors. The V8 features an 8-inch Kevlar woofer and a 1-inch soft-dome tweeter. (The other members of the V Series, the V4 and V6, offer 4-inch and 6-inch drivers, respectively.) KRK's speakers stand out in a crowd: the yellow Kevlar woofer cones of the V8s are instantly identifiable.

The V8s are large for close-field monitors, almost venturing into midfield territory. They have attractive, soft-looking beveled corners. The V8s are sturdily built, and each has a slotted port at the bottom of the front baffle. According to KRK, the slotted design is more effective than are round openings in reducing port turbulence (distortion). The V8's amplifier provides 120W to the woofer and 60W to the tweeter.

The V8s, available for a reasonable price (street price is around $500 each), are loaded with little extras that add value to the monitors. The power switch's Auto position detects audio passing through the speaker and turns on the integrated power amplifiers in each monitor. If the speaker sits idle for 20 minutes, it powers itself down. A yellow LED glows on the front of each monitor whenever the amplifiers are powered up. Other switches on the rear of the speaker include a high-frequency-adjust switch, which boosts or cuts highs by 1 dB at 1 kHz, which, in my opinion, is a low point for an HF adjustment. The low-frequency adjust switch has settings for the internal highpass filter, allowing you to roll off the low end at 45, 50, or 65 Hz with slightly different

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- record up to 8 hours per battery charge

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curves, which are indicated by a frequency graph next to the switch. Those two adjust switches give you minimal but effective ways of tuning the speaker to your room and setup.

A gain pot, adjustable only by screwdriver to prevent accidental tweaks, lets you set the sensitivity of each monitor independently (the default setting is +6 dB). The final control on the rear panel is the Clip Indicator/Limiter switch. With it, you can enable a red LED indicator on the front of the speaker. The LED glows when you have reached clipping levels or when the onboard limiter circuit is switched in. The circuit protects the speaker from damage caused by overloading. The limiter also reportedly activates a green LED when it kicks in, but I couldn't get either LED to light up, despite pushing my mixes up to face-melting levels. The amplifiers appeared to stay clean, even with signals way above my usual control-room working levels.

Beefed Up

My first sonic impression of the V8s alone was a positive one. Words such as "meaty" and "thick" immediately came to mind, because these speakers have a healthy dose of midrange in them. The 8-inch drivers are slightly larger than either of my own close-field pairs, so my perception of the hefty low mids is based partly on what I am used to hearing. KRK's V8 literature acknowledges that the speakers aren't flat and explains that a flat frequency response isn't what makes a good studio monitor. I agree with that assessment, and the V8's tuning was flattering to my trusty reference discs.

Adding the Rokit RP10S powered subwoofer (see Fig. 2), which was included in my review package, enhanced the sound substantially. The subwoofer features a 10-inch composite woofer with a 225W (peak) amp. The RP10S has an internal highpass filter set at 80 Hz. You can run your monitor mix through the RP10S's XLR, TRS, or RCA connections on its way to your stereo speakers, a common and convenient way to deal with the crossover frequencies between your subwoofer and your main monitors. The RP10S

FIG. 2: The Rockit RP10S subwoofer uses a 10-inch composite driver with a 225W (peak) amp.

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has two knobs: one for adjusting the subwoofer's lowpass filter to a value between 80 Hz (the correct setting for use with the V8s) and 130 Hz, and another for setting the gain of the subwoofer's integrated amplifier.

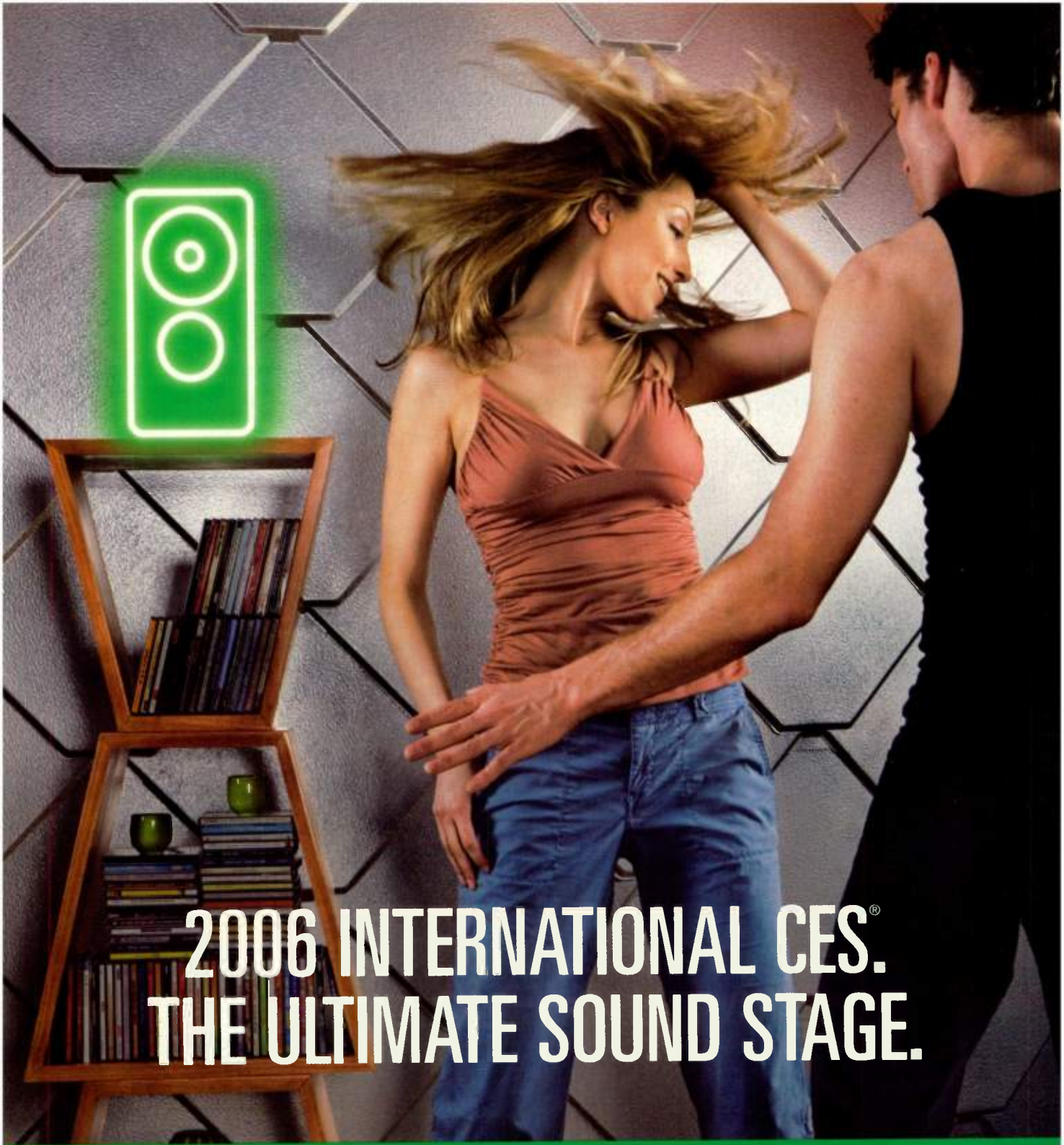
A Phase Switch is also included to help correct phase problems due to placement and room reflections. (The phase switch flips the polarity of the signal in the subwoofer 180 degrees; it doesn't alter the phase.) The manual gives some helpful hints for setting the three controls to get the best results from the subwoofer in your monitoring space. I found settings for the subwoofer that gave me the low frequencies to which I've grown accustomed, and the system didn't sound unnaturally woofy or sloppy. My only complaint with the subwoofer controls is the lack of any detents on the pots, which would greatly facilitate reproducing a previous setting.

V8 SPECIFICATIONS

Drivers	8" woven Kevlar woofer; 1" soft-dome tweeter
Analog Inputs	(1) balanced XLR/¼" TRS combo jack
Input Impedance	10 kΩ
Input Sensitivity	+6 dB to –30 dB variable
HF Adjust Control	+1 dB, flat, or –1 dB
LF Adjust Control	–3 dB @ 42 Hz, 50 Hz, or 65 Hz
Amplification	LF: 120W; HF: 60W
Frequency Response	42 Hz–20 kHz, ±1.5 dB
Maximum SPL	109 dB average, 111 dB peak
Dimensions	11" (W) × 16.7" (H) × 12" (D)
Weight	35 lbs.

The Skinny

Many engineers believe that the most important factor in choosing a monitoring system is how well their resulting mixes translate to the real world. Whether any one



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RP10S SPECIFICATIONS

Driver	10" glass aramid composite woofer
Analog Input	(2) balanced XLR, (2) balanced ¼" TRS, (2) unbalanced RCA
Analog Output	(2) XLR, (2) balanced ¼" TRS
Highpass Filter	80 Hz fixed
Lowpass Filter	0–130 Hz variable
Input Impedance	10 kΩ
Power Rating	150W RMS, 225W peak
Signal-to-Noise Ratio	98 dB
Total Harmonic Distortion	.05%
Frequency Response	36 Hz–150 kHz, ±1.5dB
Dimensions	14" (W) × 15" (H) × 15.7" (D)
Weight	42 lbs.

monitoring system can work well in every environment is doubtful; nonetheless, the environment in your control room should function so that your mixes sound good on various systems, such as audio in cars, boom boxes, and home stereos. My studio partner John Finkbeiner and I agreed that the combination of the V8s and the RP10S gave us an above-average representation of how our mixes would sound in those other environments. The KRK system sometimes even edged out the systems that we have used regularly and with which we have grown familiar over the years.

Overall, I like these speakers. They complement my other monitors in a way that I will miss when the KRK system is gone. If I were in the market for a new pair of close-field monitors, I would seriously consider buying them, especially because the entire 2.1 system costs about $1,300, which is about the same price as my main subwoofer alone. There is a slight emphasis in the low- and high mids compared with my other monitors, making the V8s a little tubby and somewhat harsh sounding on certain material. But I found those qualities helpful in making my mixes come across more smoothly on other systems. I recommend giving the V8s a listen if you are in search of a new monitoring system.

PRODUCT SUMMARY

KRK SYSTEMS V8 and Rokit RP10S

powered monitors and subwoofer
V8 monitor
$999 each

Rokit PR10S subwoofer
$599.99

OVERALL RATING (1 THROUGH 5): 4

PROS: Clean signal even at very loud levels. Subwoofer has flexible I/O. Mixes tend to translate well. Concise, informative manual.

CONS: No detents at landmark frequencies or levels on subwoofer controls.

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QUICK PICKS

M-AUDIO

Trigger Finger

By Orren Merton

M-Audio's Trigger Finger ($249) joins a growing a number of USB keyboards and other MIDI controllers that offer Velocity-sensitive MIDI pads. MIDI pads are ideal for triggering rhythmic sounds and samples that don't require a traditional keyboard layout to play. The Trigger Finger is multiplatform, portable, and suitable for stage and studio. And, like many M-Audio products, it is affordable.

Aim and Squeeze

Although the Trigger Finger's main feature is its bank of 16 Velocity- and pressure-sensitive pads, it offers much more. Eight rotary knobs are located above the pads, and an LED display, four function buttons, and four sliders are on the left. The first two buttons let you select, edit, and save presets to 16 memory locations. Another button toggles between Control Mute and Note Mute modes, and the remaining button toggles between a user-determined locked Velocity and full Velocity. All the knobs, sliders, and pads are fully user-assignable.

M-Audio's Trigger Finger is a USB-powered MIDI controller that gives you 16 Velocity- and pressure-sensitive pads, 4 sliders, and 8 knobs—all of them user-assignable to transmit an assortment of MIDI messages.

On the back of the Trigger Finger are its USB port, MIDI Out port, and power connection, as well as a Kensington lock slot. Though the Trigger Finger is bus powered, an optional 9V DC adapter lets you use it as a standalone MIDI controller without a computer.

The Trigger Finger is a USB-class-compliant device, meaning it harnesses the built-in MIDI support of Mac OS X or Windows XP. Simply route a USB cable from your computer to the Trigger Finger, and you can immediately use the unit—there aren't any drivers to install. I tried hot-plugging and unplugging the Trigger Finger to and from my Apple Power Mac G5 and Dell Inspirion 6000, and my OS and audio applications always recognized it.

Unlike Mac OS X, Windows XP doesn't offer driverless multiclient USB support. Consequently, if you run Windows XP and want to use the Trigger Finger with more than one application simultaneously (using ReWire to connect Reason to Live, for example), then you will need to install the included multiclient Windows XP driver. Thankfully, M-Audio's MIDI Controller Series Wizard makes installation quick and intuitive.

Using the Trigger Finger is equally intuitive. The unit supplies numerous presets for Live, Reason, and iDrum, as well as for GM- and XG-format drums. To use any of those applications or formats, simply launch your application, select the preset, and start triggering sounds immediately. The package also includes Ableton Live Lite 4.

Trigger Happy

The Trigger Finger is surprisingly deep. Striking a pad with your fingertip will transmit an assigned MIDI Note, Velocity, and a user-definable MIDI Control Change (CC) value (but not Aftertouch) that responds to pressure. With the Velocity Lock feature, you can set up all the pads to trigger the same MIDI note at a different Velocity level. Twisting knobs and moving sliders will also send MIDI CC values. You can send Program Change or Bank Change messages by pressing the Program/Bank Change button and a corresponding pad. To minimize parameter jumps, pressing the Control Mute button lets you move sliders and knobs within the ballpark of your onscreen parameters without sending any values.

You can create your own pad, slider, and knob assignments using either the hardware's user interface or the included Enigma editor software. Because the Trigger Finger has only a 3-character LED for visual feedback, I recommend using Enigma, which offers convenient, graphical, drag-and-drop editing.

I enjoyed using the Trigger Finger. It is simple enough to get up and running quickly, and yet deep enough for even advanced MIDI tweakers. I used the built-in Live and iDrum presets, and I also used the unit to trigger Apple Logic's Sculpture plug-in. I wish it had a better display and perhaps some LCD windows above the sliders and knobs, but those features would increase its cost. In addition, instead of settling for Control Mute mode, I'd rather be able to move a knob or slider without changing its assigned parameter until it reached the current value. Even without those extras, though, you will have a blast with the Trigger Finger.

Overall Rating (1 through 5): 4
M-Audio
www.m-audio.com

DOEPFER

R2M

By Gino Robair

Horizontal control surfaces—ribbon strips in particular—have always been popular on electronic instruments. Doepfer based the design of its ribbon controller on the Trautonium, an early German electronic instrument that used a string manual to control pitch and volume. The Doepfer manual is a horizontal position sensor, played with the tip of a finger, that includes a conductive rubber strip to sense pressure.

Doepfer's first version used an analog-synth-style module as the interface and offered two control voltage (CV) and two gate outputs. To power it, you needed an A-100 frame and power supply.

In contrast, the R2M ($299) is a standalone system consisting of a ribbon manual and a tabletop hardware interface. Unlike its predecessor, the R2M (which stands for ribbon-to-MIDI)

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interface offers simultaneous MIDI In and Out, two CV outputs, and a gate output, giving this controller greater versatility for studio and stage use than its predecessor.

On the Horizontal

The ribbon manual is just over 23.5 inches long, with a playing area of about 19.5 inches. It feels weighty and well built, and its size and shape allows it to sit above the keybed of your favorite controller. You can use Velcro to keep it from sliding around or use the small holes on the bottom and ends of the ribbon manual for permanent mounting.

The diminutive control box has a 2 × 16 LCD and ten buttons. In addition to Preset, Store, and increment and decrement, there are six dedicated menu buttons: CV Parameter, MIDI Event, MIDI Parameter, Mode, Arpeggiator, and Start/Stop. Programming the controller is straightforward once you get the hang of it, and none of the menus are more than five pages deep. Once you get a performance setup established, you can easily save it in one of the 16 nonvolatile memory slots.

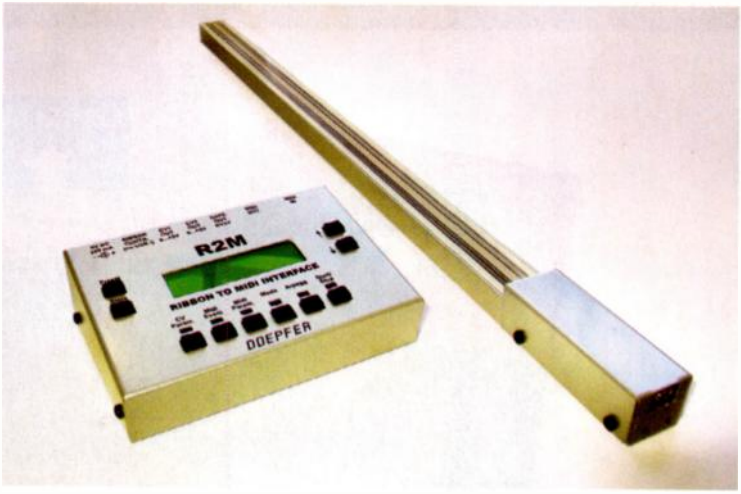
Besides the MIDI Out port, the R2M has a MIDI In port, which is used to transpose notes and control the internal 6-step arpeggiator. An external MIDI controller is required to use the R2M's arpeggiator. Running the arpeggiator with analog and digital synths simultaneously provides hours of fun (see **Web Clip 1**).

The CV/gate behavior reflects whatever the MIDI settings are, and you will need to set the R2M's pitch-bend range to match the destination device's range. That's easy to do with the control box.

The CV outputs have a range of 0 to +5V. The voltage level of CV 1 is determined by horizontal finger position on the manual, and it is typically used to control pitch using the 1V/octave standard. The level of CV 2 is determined by finger pressure.

The R2M lets you invert the polarity of each controller axis independently. For example, you can use left-to-right motion to lower the pitch, or vice versa, while using pressure to raise or lower a filter's cutoff frequency.

The gate output sends a 0V (closed) or 5V (open) signal, and you can set the polarity so that the gate is open when the ribbon manual is touched or vice versa. Owners of vintage Moog synths will appreciate that the R2M can be used with instruments that need S-triggers. Unfortunately, that mode requires you to remove a jumper inside the control box—not the most elegant solution, but it's available.



The R2M system comprises a control strip that is connected to a control box using a USB-style cable.

Slippin' and Slidin'

You can also use the R2M melodically. You can set the range from 1 to 5 octaves and select one of 15 pitch quantizations, from chromatic to chordal (including chords built on fourths, fifths, and sixths), allowing you to play melodies and arpeggios. You can't set up your own pitch set, however, and the controller doesn't give you the final octave note (for example, with a major scale, your highest note will be the major 7th, never the octave), except in 1-octave mode.

There are seven performance modes: simple note triggering, three ways to add pitch bend once a note is triggered, and modes for sending Control Change, Aftertouch, and Program Change data. The user manual points out that the ribbon's pressure axis is not as accurate as the positional axis, so if you want exact control over a parameter, you're better off using the horizontal axis. The pressure strip offers a large degree of sensitivity, however, and it works well with most CV and MIDI parameters.

The R2M does have one flaw. The horizontal sensor sometimes introduces a subtle and erratic noise into the audio signal, causing a variation in timbre, especially the harder the ribbon is pressed. (It doesn't matter whether the pressure sensor is on or off.)

If I could add anything to the R2M, it would be a bipolar response (10V peak to peak) and a zero-point mode. That way, no matter where you touch the ribbon, you can bend in either direction from your original note (as with the Yamaha CS-80). Having more notes in the sequencer would also be a welcome addition.

Under Full Control

Overall, the R2M is a very useful controller that covers a number of performance needs. It's simple to program, works well with MIDI- and CV-controlled instruments, and is a joy to use.

EM WEB CLIPS

Overall Rating (1 through 5): 3.5
Doepfer Musikelektronik
www.doepfer.com

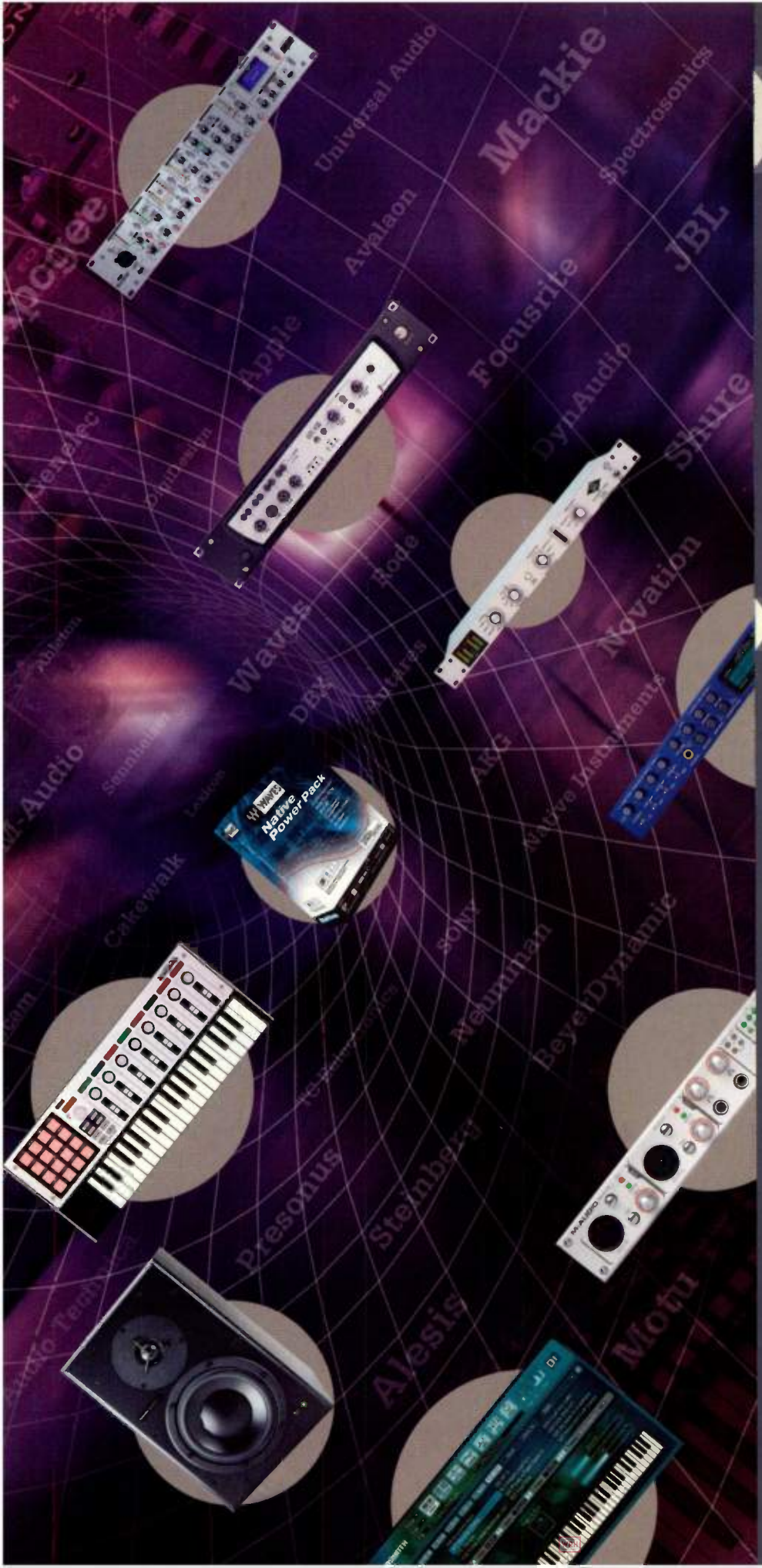
SMART LOOPS

Pro Drum Works, vol. 1

(Apple Loops Edition)

By Mike Levine

With all the drum-loop collections on the market, making the right



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purchasing decision can be tricky. Beyond just a product's stylistic focus, you need to consider such factors as its performance or programming, and its recording and mix quality. Another issue is its organization: how easy is it to find what you're looking for? You also need to take into account how much variety is offered, and whether the loops are in multitrack format in addition to stereo.

Smart Loops' new collection, *Pro Drum Works*, vol. 1 ($249), scores highly in most of those areas. You get solid playing, great mixes and sound quality, and a huge selection of content focused mainly on rock and pop styles. Multitrack loops are not offered.

Loops of Plenty

The Apple Loops edition of *Pro Drum Works*, vol. 1, comes on a single DVD-R disc (an Acidized WAV version is also available). I tested the loops out on Logic Pro 7.1, Soundtrack Pro 1.0, GarageBand 2.01, and Digital Performer 4.6. I didn't experience problems importing loops into any of those applications. I also didn't notice any sonic problems when changing tempos within the large range specified in the *Pro Drum Works* documentation (75 to 150 bpm).

Every loop, fill, and one-shot is offered in three drum-kit sounds. The Acoustic Kit gives you a natural sound; the Thunder Kit offers big-sounding, heavily compressed drums (great for rock); and the Trap Kit was recorded with a smaller drum set with a resonant kick drum. It's aimed more at hip-hop, R&B, and acid jazz.

The loops in *Pro Drum Works* are generally one measure in length, though some fills are shorter. There are 3,000 unique loops, fills, or one-shots in the collection. Because each is repeated for the three kits, there are actually 9,000 elements in all.

Getting Organized

To handle such a large assortment, Smart Loops has devised its own system of categorization. It takes some getting used to, but once you grasp its structure, finding what you want is easy.

The loops are separated according to the three drum-kit sounds. They're then classified according to their kick-drum patterns. Loops in the Basic category have simple eighth-note kick patterns, while Funk loops have syncopated kick parts. Reggae loops have kicks on beats 2 and 4, and Double-Kick loops feature eighth-note, 16th-note, and 32nd-note kick parts. Loops in which the snare hits on beats other than just 2 and 4 are given the letter designations of A through D, which correspond to differing levels of complexity.

The loops are arranged in folders representing combined categories of loop types for each drum sound (for example "Basic + Funk" or "Basic C + Funk C"). Within those folders, the loops are divided further by cymbal pattern (eighth-note or 16th-note) or cymbal type (open or ride). There's also a category for floor-tom-oriented patterns. Once you've drilled down to the type of loop you want, there are plenty of variations available.

Pro Drum Works offers loops in a wide range of pop, rock, funk, and reggae styles. There's even a good selection of cut-time, double-time, and train beats. One type of groove that's completely missing, however, is shuffles. (At press time, Smart Loops released *Pro Drum Works*, vol. 2, which consists completely of shuffle grooves.)

Had My Fill

A global folder for fills is located in each of the drum-kit folders. You get numerous fill variations, categorized mainly by the drums used (Snare-Tom, Kick-Snare, and so on). Unlike many loop collections I've seen, the fills are offered separately from the grooves with which they were originally played. That "generic" approach allows a lot more fills to be available, and for much of the material, mixing and matching the grooves and fills works fine (see **Web Clip 1**).

Inevitably, not every fill fits stylistically with every groove. In addition, many of the fills are a full measure long, which is overkill for a lot of musical styles. I often shortened fills and grooves and edited them together.

***Pro Drum Works* from Smart Loops features a wide range of stereo loops, fills, and one-shots in three drum-kit sounds.**

The Works

Once I got the hang of its organizing scheme, *Pro Drum Works*, vol. 1, turned out to be an excellent resource for well-played and consistently good-sounding stereo drum loops. It allowed me to quickly assemble authentic, song-length drum parts. The collection offers so many different drum grooves and variations that, unless you're looking for shuffles, you're likely to find just what you need for your pop and rock productions. EM WEB CLIPS

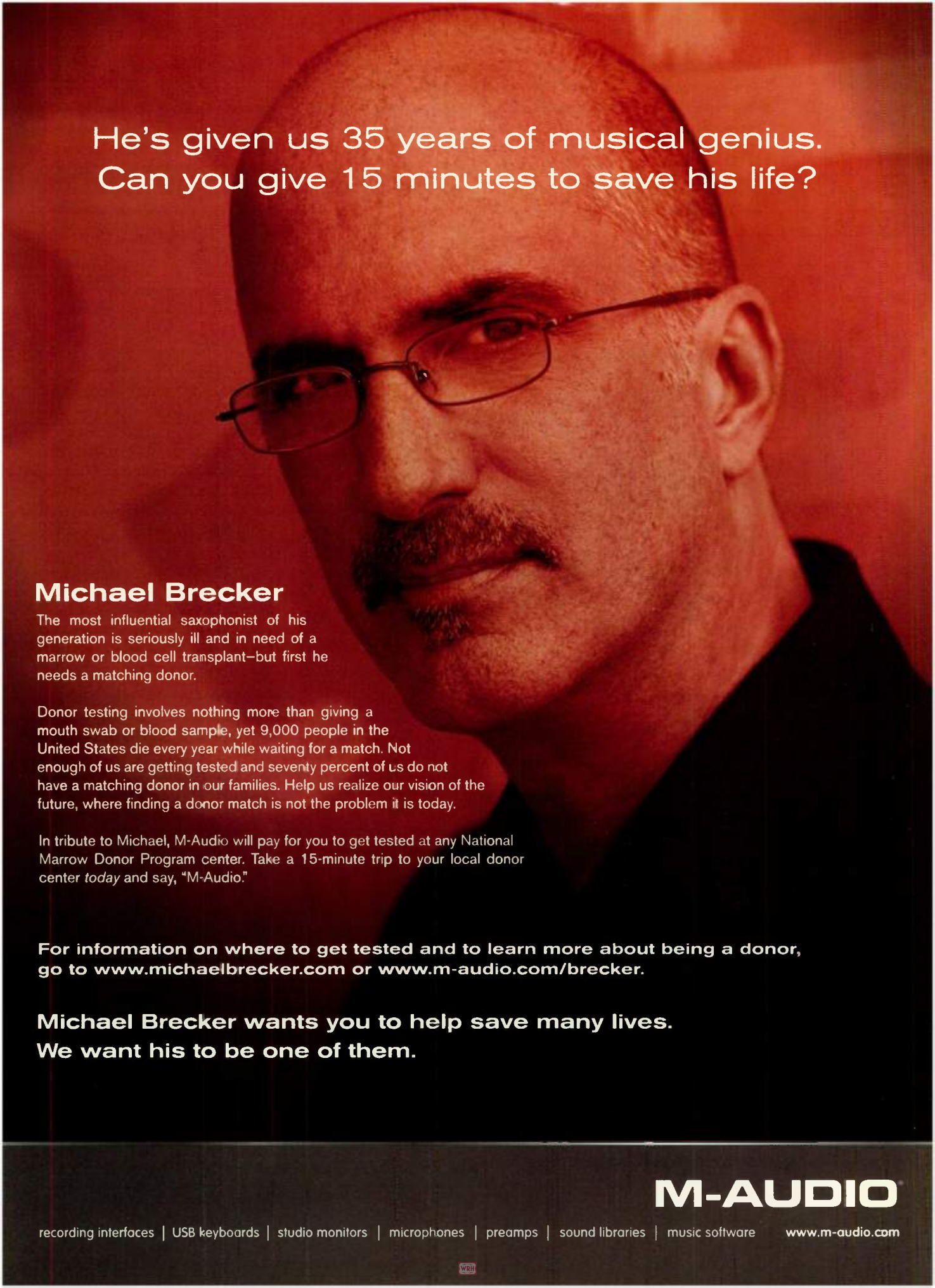
Overall Rating (1 through 5): 4
Smart Loops
www.smartloops.com

BEHRINGER

B-Control Nano BCN44

By Rusty Cutchin

Behringer's B-Control series consists of several desktop hardware MIDI controllers that can be interconnected to provide a complex modular control surface for digital audio applications. Like other control surfaces, the B-Control series makes life easier for software-dependent musicians by providing tactile solutions to problems associated with mousing around in audio applications. MIDI controllers such as those give the user real knobs and buttons to use instead of graphical ones,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which can be cumbersome to control with a mouse. The Nano BCN 44 ($64.99) is the newest B-Control unit, and it provides a dependable low-cost control surface that takes up minimal desktop space and is ideal for field use with a laptop. The unit comes with a 9 VDC adapter and also runs on three AA batteries.

Fireplug

The Nano as its name implies, is a small (½U) unit designed as a tabletop device, but it's just the right size for a rack tray with a second unit for a second computer. The Nano's surface holds eight buttons, four large knobs, and a Spartan LED display. When pressed, the knobs—marked Channel, Parameter, Value 1, and Value 2—activate small accompanying LEDs along with the knob's assigned function.

On the upper-left side of the unit's surface, two buttons marked Panic send All Notes Off commands to any connected sound-generating devices. Those buttons double as Preset increment and decrement buttons for stored MIDI configurations. The presets can total 99, but the buttons don't allow you to move quickly from a low-numbered preset to a higher-numbered one. Holding down one or both buttons doesn't make the displayed preset number change rapidly. Cycling power to the unit brings up the most recently chosen preset.

On the upper-right side are twin buttons marked Global. Holding both down puts the unit into Global mode, in which you can use the pots to designate the MIDI receive channel, device ID, SysEx dump mode, and merge status. Those buttons also serve as Store and Edit/Exit controls. Used with the Learn button on the bottom right side of the panel, those buttons allow the Nano to memorize commands fed to it from another MIDI device, usually a keyboard or a sequencer, making the unit a time-saver for storing complex command setups.

The Nano's rear panel houses a power switch, the power-adapter receptacle, and single MIDI In and Out ports. A merge function lets the Out port function as a MIDI Thru. That allows you to connect a keyboard to the Nano's MIDI In connector and use either the Nano or the keyboard to trigger sounds or to adjust settings on sound modules.

Quick and Dirty

The Nano couldn't have been easier to set up. I plugged the unit into a power source and connected it to a Roland Fantom-S keyboard to confirm that the unit could advance presets smoothly without additional programming. The Nano's buttons and knobs felt sturdy, and the old-school LED display provides enough information to let you know where you are at all times. (Bear in mind, however, that when running on battery power, the Nano's display will not show the current preset. You must hit a button, and it will display briefly.)

I then connected the Nano's MIDI In to the output of the Lexicon Omega USB audio/MIDI interface that was attached to my Mac G5 running Digital Performer (DP). I wanted to test the Nano's Learn function for a

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control-surface task I've often had a need for over the years: correcting misplaced or mangled sustain pedal data (controller 64) on keyboard parts. I manually entered a pedal-on command onto a track in DP.

I set the Nano to Learn mode by holding down the Edit/Exit button, activating one of the four buttons at the bottom of the unit, releasing the Edit/Exit button, and then pressing Learn. I played back the DP track briefly, and the button became a sustain controller. I duplicated the sequence to put a sustain-off command on another Nano button. Then I could strip out all controller 64 messages from tracks and manually replace them using the Nano's newly programmed "sustain" buttons. I stored that basic preset to use later.

The Nano worked flawlessly in Learn mode, and for me that was the fastest way to customize the unit for my purposes. I was able to use the Nano to replace a sustain pedal and increment buttons, as well as for tasks such as volume control of plug-ins and adding continuous-controller information in real time. Although I generally had no need for a small, limited MIDI controller, I found the Nano to be convenient in ways that I hadn't anticipated, such as for recording real-time, random-panning data to tracks.

Behringer's B-control Nano BCN44 is a low-cost MIDI controller that stores 99 presets and can run on either an AC adapter or three AA batteries.

Control on the Cheap

The B-control Nano BCN44 is not for everyone, but its no-nonsense functionality and low price make it a serious option for those who need a lot of presets for various controller tasks and easy (if compromised) portability. And if you find you run out of buttons, knobs, and presets too quickly, there's an easy solution: buy two or three more units. EM

Overall Rating (1 through 5): 3
Behringer
www.behringer.com

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For Extreme Native Recording

Lay down extreme track counts with this native recording powerhouse

The Apple Power Mac G5 is capable of recording over 100 tracks simultaneously — even to the second internal serial ATA drive. Make no mistake: G5-based native systems can handle today's most demanding multitrack recording scenarios via multiple FireWire and PCI MOTU audio interface configurations. And the modest cost of these systems gives you plenty of room in your budget for the additional gear you've always dreamed of.

Massive I/O

Connect up to four MOTU FireWire interfaces — that's up to 80 inputs at 44.1 or 48kHz sample rates — on the internal FireWire bus and more via FireWire expansion cards. The MOTU 896HD provides 8 mic/instrument inputs with preamps, individual 48V phantom power and individual front-panel trim control. Quickly adjust input levels via luxurious 10-segment front panel LEDs. The MOTU 828mkII and Traveler interfaces provide 2 and 4 mic/instrument inputs, respectively, along with 8 quarter-inch TRS inputs each. All three models provide 8-channel optical digital I/O, along with either AES/EBU or S/PDIF digital input/output.

A new studio standard

The flagship of the KSM line — and the new must-have mic for any large multitrack studio, the Sure KSM 44 multi-pattern condenser microphone has an extended frequency response specially tailored for critical studio vocal tracking. Its ultra-thin, externally biased, large dual diaphragms provide precise articulation; extremely low self-noise (7 dBA) ensures that the KSM44 captures only the sound of the performance. Inside, the three polar patterns — Cardioid, Omnidirectional, and Bidirectional — offer greater flexibility and uniformity in a wide variety of critical recording applications.

Class A, transformerless preamplifier circuitry provides extremely fast transient response and no crossover distortion for improved linearity across the full frequency range.

Call the MOTU system experts.

Removable storage

The Glyph GT103 offers many advantages for large-scale multitrack recording, including hot-swap portability and convenience. Specifically designed recording scenarios that require multiple drives, the GT103 can be configured with three FireWire hot-swap GT Key drives of any capacity. Using Glyph's proprietary Integrity™ hot-swap technology, you can easily shuttle content to other GT Series enclosures. To keep your studio quiet, GT Keys incorporate sound-dampening composite metal technology in their frames. Includes three-year warranty, plus overnight advance replacement warranty in the first year for GT Keys.

On-demand plug-in processing.

How do you conserve precious CPU cycles for the demands of multitrack recording, but also run all of today's latest plug-ins and virtual instruments? The Muse Research Receptor is a dedicated hardware-based plug-in player for your favorite VST software. With 16 channels to run virtual instruments or effects, a built-in MIDI interface and a versatile complement of digital and analog I/O, Receptor is the ideal way to run plug-ins while keeping your host computer running smoothly. Control everything from the front panel, or simply connect a monitor to the back. Visit museresearch.com to view demos by Dream Theater's Jordan Rudess and to learn about Receptor's new UniWire™ technology, which provides MIDI, audio, and remote control between Receptor and your computer via a single Ethernet cable. Receptor provides the ultimate in performance, stability, and sonic performance.

Waves distributed processing.

For large-scale multitrack recording systems, it is good practice to offload plug-in processing from you host computer. The Waves APA-44M delivers on-demand Waves processing to your MOTU native desktop studio via standard Ethernet. Open your existing Waves plug-ins as usual in Digital Performer via the new Waves Netshell™. But now you can run up to 6 Waves IR-1 Convolution reverbs at 44.1kHz at once, and save your CPU power. Need more Waves processing? Just add another APA-44M with the snap of an RJ45 Ethernet cable. It's that simple. For extreme processing needs, connect up to 8 units to your network. The APA-44M is equally at home connected to a laptop, desktop or both. Just transfer your Waves authorized iLok. You can even share a stack of APA-44M's among several computers across the Waves Netshell network. The APA-44M ushers in a new era of state-of-the-art, distributed-network Waves processing for your MOTU multitrack studio.

Power conditioning

A large-scale multitrack studio is an investment. Protect that investment — and get the best possible performance from it — with the Monster Pro 2500 and Pro 3000 PowerCenters. Much more than just a "surge protector", both devices use Monster's patented Clean Power™ filter circuitry (U.S. Pat. No. 6,473,510 B1) with separate noise isolation filtered outlets for digital, analog and high-current audio components. The result is high quality sound that's free from hums, buzzes and other power line artifacts, revealing all of the rich harmonics and tone in your recordings. Get All the Performance You Paid For™.
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The groove.

Spectrasonics Stylus RMX v1.5, the award–winning "groove standard", gets better and better with new features like "Chaos Designer™ Buzz" for stuttering edits, 500 incredible new categorized Multi grooves and 250 slamming new Kits. It's even easier to learn RMX now with the new Reference Guide/Help System and hours of brand new tutorial videos – including one specifically for Digital Performer users!

The controller.

Digital Performer captures every nuance of your MIDI performance. The M-Audio Keystation Pro 88 is an 88-key hammer-action USB powered MIDI controller delivers fine-tuned response to satisfy even the most demanding players. Add four zones, a stunning set of MIDI-assignable controllers all in a compact 40 pound package, and you have the most comprehensive product of its kind!

The control room.

The PreSonus Central Station™ is the missing link between your MOTU recording interface, studio monitors, input sources and the artist. Featuring 5 sets of stereo inputs (3 analog and 2 digital with 192kHz D/A conversion), the Central Station allows you to switch between 3 different sets of studio monitor outputs while maintaining a purely passive signal path. The main audio path uses no amplifier stages including op amps, active IC's or chips. This eliminates coloration, noise and distortion, enabling you to hear your mixes more clearly and minimize ear fatigue. In addition, the Central Station features a complete studio communication solution with built-in condenser talkback microphone, MUTE, DIM, two separate headphone outputs plus a cue output to enhance the creative process. A fast-acting 30 segment LED is also supplied for flawless visual metering of levels both in dBu and dBfs mode. Communicate with the artist via talkback. Send a headphone mix to the artist while listening to the main mix in the control room and more. The Central Station brings all of your inputs and outputs together to work in harmony to enhance the creative process and ease mixing and music production.

Mastering & restoration.

Your DP mastering and processing lab awaits you: BIAS Peak Pro 5 delivers award winning editing and sound design tools, plus the world's very best native mastering solution for Mac OS X. With advanced playlisting. Superb final-stage processing. Disc burning. Plus PQ subcodes, DDP export (optional add on), and other 100% Redbook-compliant features. Need even more power? Check out our Peak Pro XT 5 bundle with over $1,000 worth of additional tools, including our acclaimed SoundSoap Pro, SoundSoap 2 (noise reduction and restoration), Squeez-3 & 5 (linear phase multiband-compression/limiter/upward expander), Reveal (precision analysis suite), PitchCraft (super natural pitch correction/transformation), Repli-Q (linear phase EQ matching), SuperFreq (4,6,8, & 10 band parametric EQ) and GateEx (advanced noise gate with downward expander) — all at an amazing price. So, when you're ready to master, Peak Pro 5 has everything you need. It's the perfect complement to DP.
Or, perhaps we should say, it's the perfect finishing touch.

Call the MOTU system experts.

The faders.

Imagine the feeling of touch-sensitive, automated Penny & Gites faders under your hands, and the fine-tuned twist of a V-Pot™ between your fingers. You adjust plug-in settings, automate filter sweeps in real-time, and trim individual track levels. Your hands fly over responsive controls, perfecting your mix — free from the solitary confinement of your mouse. Mackie Control delivers all this in an expandable, compact, desktop-style design forged by the combined talents of Mackie manufacturing and the MOTU Digital Performer engineering team. Mackie Control Universal brings large-console, Studio A prowess to your Digital Performer desktop studio, with a wide range of customized control features that go well beyond mixing. It's like putting your hands on DP itself.

The monitors.

The Mackie HR-Series Active Studio Monitors are considered some of the most loved and trusted nearfield studio monitors of all time, and with good reason. These award-winning bi-amplified monitors offer a performance that rivals monitors costing two or three times their price. Namely, a stereo field that's wide, deep and incredibly detailed. Low frequencies that are no more or less than what you've recorded. High and mid-range frequencies that are clean and articulated. Plus the sweetest of sweet spots. Whether it's the 6-inch HR-624, 8-inch HR-824 or dual 6-inch 626, there's an HR Series monitor that will tell you the truth, the whole truth, and nothing but the truth.

Your personal Sweetwater Sales Engineer offers much more than just a great price. They do the research, day in and day out, to ensure that you'll fine-tune your system to fit your exact needs.

Short Attention Span Theater

By Larry the O

It seems that ever since MTV popularized quick-cutting as the dominant editing paradigm for video, the attention span of the general public has been getting shorter. Of course, MTV was just the vanguard of what has become a relentless torrent of information and entertainment blasting from cable TV, the Web, RSS feeds, email, cell phones, and so forth. It is almost impossible to keep current, even with things that are of direct interest.

With so much to see and hear, yet with so little time, it is understandable that people feel increasingly pressured. Consequently, there is less tolerance for anything that takes time to consume. That, combined with economic pressures, has resulted in magazines running shorter articles. One editor (not from *Electronic Musician*), speaking about article length, said, "If it's longer than a 'toilet read,' it's too long." And so was born the Short Attention Span Theater (SAST).

The swelling attendance at the SAST is not a good trend. There are a great many flowers that require tending before they will bloom. That applies especially to anything involving a point of view or a way of thinking: consideration and rumination are needed to grasp those. But reflection does not do great box office at the SAST; quick digestibility does. One result is a mighty dumbing-down, in which a thought or a fact might be mentioned, time and space permitting, but it cannot be explored. I'm not referring to the need to introduce a "hook" early in order to catch the audience's interest, but rather, a narrowing of scope and a shallowness of detail. There are still places where one can find stories with depth, but decreasingly so in the mainstream media.

With so much to see and hear, yet with so little time, it is understandable that people feel increasingly pressured.

Hollywood, finding SAST shows to be standing room only, has responded by focusing on eye candy, such as digital effects and nonstop action sequences, since viewers seemingly lack the concentration and the patience for plot or character development. It even could be argued that the popularity of loops in today's music, while not inherently bad, is a sign that people find it faster and less taxing to sample a bunch of existing sources and assemble them into layers and sequences than to build textures of their own from scratch.

Popular culture has always been shaped by pressures of the least common denominator, but the success of the SAST has pushed thoughtfulness further underground than ever before, leaving us informed but not enriched. In the larger picture, that diminishes humanity. The silver lining is that today's prodigious communications capabilities make available explorations that are more expansive, whether it be text- and graphics-oriented information on the Web or the ability for independent musicians to create with low-cost, accessible tools.

But one must actively seek out depth. News sites like Slashdot and boingboing display news bites that are a single paragraph in length. Getting more information is as easy as clicking on a link accompanying the paragraph, but many people never do. Their grasp of news stories comes from reading a series of single paragraphs. Legitimate sites for downloading music often take a similar approach, forcing one to make a purchasing decision that is based on auditioning a snippet less than a minute long.

I see signs that regular attendance at the SAST is leading some people toward a view of the world that is based on the broad generalizations that constitute "all the news that fits." This path leads to a less critical view of the arts, as well as of the world in general.

I don't want to see the pace of life make us into vapid people, experiencing the world superficially. Read the long story. Make time to listen to music so that it is a focused activity, rather than just an accompaniment to some other activity. Walk out of the Short Attention Span Theater. You and the world will be richer for it. EM

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